THE LANCET.

LECTURES

ON THE

THEORY AND PRACTICE OF PHYSIC,

By DR. CLUTTERBUCK.

Theatre, General Dispensary, Aldersgate-street.

Lecture XI.

Gentlemen,

It appears to me so indispensably necessary to admit the active or muscular power of the blood-vessels, in order to understand the nature of the most important diseases, that I must claim your indulgence for dwelling somewhat longer on the subject, and for even recapitulating some of the most important points.

In the two preceding lectures, I have endeavoured to prove, that the heart is not the sole propelling power of the blood: on the contrary, that it contributes but a small share, towards the performance of this function. I mentioned to you, that upon the supposition of the heart being the sole cause of motion in the blood, it is impossible to explain the varying force of the circulation, and the unequal distribution of blood to various parts of the system. If the blood-vessels were merely passive tubes of conveyance, or were possessed only of elasticity, the effect of every change in the action of the heart, must be felt equally throughout the whole vascular system, in proportion to the size of the vessels, their direction, and distance from the heart. But this is not at all the case. A great degree of inequality in the distribution of the blood, is often observed, when the heart is acting with either augmented or diminished force. And what is of still more weight, in proving the influence of the vessels themselves, and their independence on the heart, is, that violent action of vessels, and, its necessary consequence, increased circulation, are often observed, where the heart itself remains undisturbed.

The most powerful argument on the subject, however, is derived from the fact, that many animals exist without a heart, but have vessels in which their blood is nevertheless kept in motion, which must necessarily be effected by the action of the vessels themselves. Thus, in the leech, the sanguiferous system consists of four blood-vessels, reaching longitudinally, from one extremity of the animal to the other. Two of these vessels are placed laterally, and furnish anastomosing communications; these appear to be arteries, and have an observable *systole* and *diastole*, a sort of undulatory motion. The other two are dorsal and ventral, and appear to be veins. But there is no heart. Thus a heart appears to be a less necessary part, than blood-vessels.

If it is probable, then, that the heart is insufficient to effect the motion of the blood through the innumerable branches of the arterial and venous systems; and if, in many animals, and in certain parts of others, the circulation is found to be carried on independent of the heart's action; it remains to inquire whether any other power exists (except that of the vessels themselves,) by which the motion of the blood can be effected.

An idea has been entertained by some, that the heart and lungs possess a degree of elasticity, which tends to expand them, and thus to create a vacuum; and that by this means, the blood is drawn from the venous trunks into the heart, and next from the arteries into the veins at their extremities; by suction, as it were. This notion was first promulgated, I believe, about fifty years ago; by Dr. Andrew Wilson, a physician practising at Newcastle, and has been of late adopted by others.

Such an hypothesis, however, appears to be quite untenable; since nothing exists in the structure of the heart, that can be supposed capable of forcibly increasing the capacity of the ventricles or auricles; whilst this organ is too

loose in its attachments, to be affected in this way by the neighbouring parts. No conceivable arrangement of muscular fibres, could have the effect of producing expansion of the sides of the ventricles or auricles; and there is no elastic structure, as in arteries, to produce the effect. No power of suction, therefore, with regard to the veins, can be reasonably attributed to the heart.

But even allowing the heart to be so far constructed like a pump, as to be able to form a vacuum in its cavities, still the effect would not follow, unless the veins were rigid tubes; without this, the instant a vacuum began to be created in the heart, the pressure of the atmosphere would compress the sides of the veins together, so as to render them impervious. This is too obvious to need being dwelt upon. Indeed it seems inconsistent to suppose, that the same organ, by any mechanism, should be capable of two such opposite effects, as forcible expansion and contraction; as must be the case, if it acted both as a forcing and sucking pump, as has been fancied.

It has been suggested, that the veins, by a kind of absorption, facilitate the passage of the blood from the arteries. The opinion that the veins have a power of absorption, appears indeed very probable. There are parts of the body, (for instance the brain,) in which no lymphatic vessels have been hitherto satisfactorily traced; and yet where it seems impossible to doubt, that absorption takes place. But, if so, to what other structure can this be attributed, than the veins? There are so many points of analogy between veins and lymphatics, that we may well ascribe to them a community of function. The course of the fluids through both orders of vessels is the same; that is, from capillary extremities, to larger and larger trunks; the streams constantly uniting and enlarging as they proceed. They bring back equally their fluids to the right side of the heart, in order to their being transmitted to the lungs; and lastly, both orders of vessels, are valvular in their structure, where valves could answer any useful purpose. There is no difficulty, therefore, *a priori*, in supposing veins to absorb; and if so, the movement of the blood through the arterial extremities into the veins, may be in part effected in this way, and would be afterwards continued onwards to the heart, partly by the *vis a tergo* thus created at the extremities of the veins, and partly by the muscular or contractile power of the veins themselves.

There is still another opinion that has been maintained upon this subject, which I may mention, but which, though it cannot perhaps be absolutely denied, is yet so remote from our usual manner of thinking, and rests upon such slight evidence, that one feels naturally reluctant to admit it; this is, as life is but another name for self-activity, and consequently the very essence of life lies in that activity, it is impossible but that the fluids, in which that life resides, as much as in the solids, must enjoy activity as a principle of their constitution, and not yield to motion by mechanical impulse merely like inert matter. It is this principle of life contained in the blood, that disposes it to move with the facility which is observed in the circulation, and without which, it is alleged, not all the injections and mechanical contrivances in nature, could open the recesses of the vascular system, so as to render them pervious to so viscid a fluid as the blood. This opinion was maintained by the ingenious author named above, Dr. Andrew Wilson, in an Inquiry into the moving powers employed in the circulation of the blood; and which I have given in nearly his own words. I must own that I see nothing extravagant in the notion, though it is at the same time difficult to admit it.

Some other modes by which the circulation of the fluids is carried on, have been suggested, but which are scarcely deserving notice; since they will not bear a moment's inquiry. One of these is *capillary attraction*. But fluids rise by capillary attraction only in tubes that are empty; when these are once filled, the fluids cease to rise, and become stagnant. Capillary attraction, therefore, is totally inadequate to account for the continued progressive motion of fluids. The pressure of neighbouring parts has, likewise, been enumerated, amongst the causes of the circulatory motion of the blood. This, however, is inadmissible; as the greater number of vessels are not subjected to any cause of this kind.

But I have before mentioned, that the power upon which the movement of the blood principally depends, is the action of the vessels themselves, which, if they be supposed to possess muscular power, may, without difficulty, be conceived to be fully adequate to the purpose.

Various circumstances concur, in showing the influence of the blood-vessels on the circulation of the blood, independently of the heart, as, first, the great determination of this fluid that takes place to particular parts, without any corresponding increase of action in the heart itself, and which indeed, could not be

accounted for from any such increase of action in the heart, if it actually took place. Again, the action of the heart may be violently augmented, without any general increase of the circulation; as is seen in diseases of the heart, where, at the time that this organ is acting with great violence, the action of the general vascular system is often much diminished, and the extreme parts of the body cold. This could not be the case, if the blood-vessels were passive, or merely elastic tubes.

I need not mention again, all the proofs of the muscularity of the arteries. Having already fully discussed it in the foregoing lectures, I shall consider the fact as sufficiently proved.

I have told you, that two kinds of contraction of blood-vessels might be distinguished, namely the *tonic* and the *oscillatory* action; and that it is by the latter of these, that the progressive motion of the blood is effected. Having pointed out the causes that either increase or diminish the *tonic* contraction, I have now to speak of those which influence the *oscillatory* or *propulsive* action.

The *propulsive* action of blood vessels may be increased in any part, by various causes; as by *heat* externally applied, and other *stimulants*. By these, the circulatory motion of the blood is accelerated; more blood is brought to the part; and all the attending phenomena of increased circulation appear; namely, increase of temperature, greater redness in many cases, and a more active performance of functions. An increased *propulsive* action of the arteries of one part of the body may influence remote parts of the system, so as to occasion diminished action of vessels in these, by a kind of *reverse* sympathy, as Mr. Hunter termed it. Thus, it is common to observe in *head-aches*, that the arteries of the head are acting with great violence, producing increased circulation of blood, with throbbing, heat, pain, &c. whilst, at the same time, the arterial action throughout the rest of the system, is much diminished, the pulse at the wrist being small and feeble; the extremities cold; and the circulation there nearly suspended. Now, in such cases, our object is to equalise the circulation. This is to be attempted, by increasing the *propulsive* action where it is deficient, and diminishing it where it is in excess. It is in this way, that head-aches are often relieved by general stimulants, as wine, &c.; or by the warm bath; or the pediluvium, which increases the arterial action in the lower extremities, and thereby diminishes it in the head.

Distention is another very powerful cause exciting *propulsive* action of the arteries. When the external vessels are suddenly constricted, as by *cold*, or any other cause, the blood is repelled back into the large vessels about the heart; and, of course, distends them. This distention excites both them and the heart, into increased action. At first, they act irregularly, but with increased force; they make efforts to restore the balance of circulation; and this brings on, what is called, *reaction*, or the *hot fit*.

This increased action at first is natural, or healthy in kind; but sometimes its nature is changed, and it degenerates into inflammation. In this way, *carditis*, or inflammation of the heart may be brought on, by any causes which tend to throw the blood suddenly back upon the heart; as, for example, cold; or increased muscular exertion. I have thus, more than once, seen this disease induced, and that in a dangerous degree, by running uphill.

Certain *emotions of mind*, also, have the power of increasing the *propulsive* action of the heart and arteries. We are not to imagine, that they produce their effect upon the heart only; in many cases, the whole arterial system is affected. Anger, for instance, produces this effect. The milder passions, hope and joy, have an influence, of the same kind, but in a less degree. We see the influence of emotions of mind upon the blood vessels, in the act of blushing; where, in an instant, the arteries of the cheeks, and, in many instances, those of the whole neck and breast, fall into a state of increased *propulsive* action.

Muscular motion, also, produces an increased *propulsive* action in the vessels; as may be seen by putting a number of muscles into action. This produces its effect, in part, by throwing the blood (as remarked above) back upon the heart, faster than usual. When, for instance, a number of muscles are put into action, the veins become compressed. Now, the valves prevent a retrograde motion of the blood; and therefore, the effect is, to accelerate its motion towards the heart; and thus the heart is stimulated. But the effect in this case, is produced partly also, through the mind; because the *will*, which puts the voluntary muscles into action, is the result of an exertion of brain, that is accompanied with, or soon followed by, increased action of its vessels; and this excitement of the brain occasions a general increase of action throughout the vascular system.

The *propulsive* action of the blood vessels, may, likewise, be increased, by *inflammation*. This disease, although of limited extent, may after a time produce this effect upon the whole system; and it is in this way, that general febrile action is produced. Nothing is more common than to find the whole vascular system in a state of præternatural excitement, as a consequence of inflammation.

A variety both of internal and external *stimulants*, will also have the effect of increasing this *propulsive* action of the arteries. *Ammonia*, or other stimulants, applied to the stomach; and the *hot bath*, have all this effect: but more especially the hot bath, which first increases the action of vessels in the skin, and this increased action is soon extended, by sympathy, over the whole system.

On the other hand, the *propulsive* action of arteries, may be diminished by a variety of causes, most of them the reverse of those that have been just mentioned as increasing it.

Thus *cold* dimishes the *propulsive* action of the arteries, and sometimes appears to induce a kind of spasmodic contraction of their capillary extremities; as in what is called, the *cutis anserina*, or *goose-skin*, where the passage of the blood through the extreme vessels is much diminished, if not wholly interrupted. In weak persons, a very moderate degree of cold will often have this effect in particular parts, which then turn cold and livid, as if deprived of life; as in cases where the fingers are, vulgarly, said, *to die*.

Astringents, both vegetable and mineral, and also diluted *acids*, appear to have an effect of this kind; and upon this, their *sedative* power seems to depend. Accordingly, we apply them to inflamed parts, in order to diminish the *propulsive* action, as well as use them internally.

The *taking away blood*, is another cause that tends to diminish the *propulsive* action of the heart and vessels. There can be no doubt, but that, when blood is drawn largely, general weakness will be induced. The frequency with which the heart acts, indeed, is not necessarily diminished in this case; but, in proportion as blood is drawn, the impetus of circulation is lessened. This may, in some degree, be ascribed to the diminished distention of the blood vessels, rendering a greater degree of *tonic* contraction necessary; by which a greater expenditure of the vital power takes place.

As certain emotions of mind have the effect of *increasing* the *propulsive* action of the sanguiferous system, so there are others which *diminish* it. *Fear*, *Terror*, and *Despondency*, are of this kind, and produce a feeble circulation. In the cold stage of fever, the *tonic* contraction of the extreme vessels appears to be increased, while, at the same time, the *propulsive* action is diminished. These effects are probably to be ascribed to a change in the condition of the brain, as their cause.

There are certain general effects produced, (though of different kinds,) both by increased and diminished *propulsive* action. If the propulsive action of the vessels be universally increased, the force and velocity with which the blood circulates, will be likewise increased; and the consequences will be in proportion; the heat of the body will be augmented, and the functions altogether performed with greater energy. On the other hand, if the *propulsive* action be much diminished, the general circulation will be proportionally diminished, the animal heat reduced, and the functions in general imperfectly carried on.

If the *propulsive* action be partially increased, the effect then will be, increased circulation in the part particularly affected, and a more energetic performance of its function, whatever that may be. Thus, (to quote any example that occurs,) if the action of the vessels of the uterus be excited in a moderate degree, menstruation will be increased in consequence. While, on the contrary, a diminished vascular action in this organ, will have the opposite effect, and prevent that function from being properly performed.

In like manner, if the action of the vessels of the brain be increased, that organ will be roused to a more active exercise of its functions. Thus when *sensorial stimulants*, such as wine, are taken into the stomach in a moderate quantity, the cerebral functions are all observed to be performed with greater energy. If, however, the bounds of moderation are exceeded, the functions, mental as well as corporeal, are not simply excited, but at the same time disordered; and the state called *intoxication* is the result. This applies equally to other organs, as well as the brain: moderate excitement increases energy; excessive excitement occasions disorder of functions.

The *propulsive* action may be either increased or diminished in a considerable degree, and yet be within the limits of health. Thus the general circulation may be greatly increased by exercise, without any attendant disorder of functions. And, on the other hand, it may be diminished, as by loss of blood, the application of *cold*, or other *sedatives*, without being followed by disease.

If, however, the *propulsive* action is urged beyond a certain point, disease may arise, as inflammation. And, on the other hand, any considerable diminution of the *propulsive* action, or, in other words, diminished arterial action, though not in itself a disease, yet gives a predisposition to certain forms of disease, but of course of a different kind from the former.

As an example of the ill effect of long continued, or too frequent, excitement of an organ, I may mention the habitual use of intoxicating drinks, exciting the arterial action of the brain. This practice may be continued with impunity for a length of time; but it gradually lays the foundation of apoplexy, palsy, or other brain-affections, which, thus induced, generally prove incurable.

From all that has been hitherto stated, I think, Gentlemen, you may safely consider the following propositions as established; and they are well worthy of your particular notice.

1st. The blood-vessels altogether are full, during life; whereas, after death they are found in great part empty. This proves that they are more contracted during life, than after death. This cannot be referred to elasticity merely, as elasticity is a *mechanical* property, not influenced by life. It is a proof, therefore, of vital contractility, which must be taken as analogous with muscular power. This vital contractility is further proved, by their being under the influence of *stimuli*; and also by their being supplied with nerves, the irritation of which influences the state of contraction in the vessels. In both these respects, blood-vessels resemble muscular structures.

2ndly. The blood after death is found almost entirely in the veins, the arteries being empty of blood. Hence it is inferred, that the contractile power of arteries is greater than that of veins, and continues for a longer time after death. In conformity with this, the *ventricles* of the heart are generally found empty after death, while the *auricles* contain blood.

3dly. Two kinds of contraction may be distinguished in blood-vessels, both of them muscular, but different. One being continued, (the *tonic* contraction,) and which serves merely to keep the sides of the vessels in contact with the blood, but which may be exerted differently at different times and in different parts, thus determining the balance of circulation—the other, the *oscillatory*, *pulsatory*, or *propulsive*, action, corresponding with that of the heart, and upon which the progressive motion of the blood depends. This *propulsive* action begins at the heart, and is continued successively to the extremities of the arterial system, and probably exists in the veins also.

4thly. The *tonic* and the *propulsive* action do not necessarily correspond. The *propulsive* may be increased, while the *tonic* is diminished. Hence, the motion of the blood in any vessel may be increased, although the diameter of the vessel be enlarged.

5thly. In proportion as the *oscillatory* action of arteries is increased in any part, the greater will be the quantity of blood contained in them, and the greater the momentum with which it circulates through the part. In such cases, the veins will be found preternaturally distended after death. So that the fulness of veins in any part after death, is to be taken as a proof of the greater action of the arteries of such part during life. And thus we may understand, in what light *venous congestion* is to be viewed; that is to say, not as a proof of diminished arterial action, (as has been alleged,) but the reverse. It is, indeed, altogether erroneous to suppose, that the state of the veins observed after death, is that which exists during life. All modes of treatment founded on such a supposition, must therefore be wrong.

6thly. In the greater number of diseases of any importance, the *propulsive* action of the blood vessels is in excess. Consequently, our practice is mostly directed to the diminution of the propulsive action by some or other of the means which have been pointed out to you. This is the case with regard to all inflammations, hæmorrhages, the greater number of dropsies, and many other diseases. While the diseases that arise out of *diminished* propulsive action are very few and unimportant.

Lecture XII.

Gentlemen,

It will now be proper for me to advert to the state of the pulse in health, and the changes which it undergoes in disease. This will be necessary, as I shall have to refer to it on so many occasions in the consideration of disease; and also from its being one of the conditions of the sanguiferous system.

Definition of the Pulse.

The *pulse* is the stroke we feel upon applying the finger over any considerable branch of an artery, so as to compress it. It is derived from the force with which the blood is impelled onwards in the ar-

tery, and which is produced by the joint action of the heart and arteries behind. We are apt to imagine, upon feeling the pulse, that the artery is greatly distended every time the heart beats, and that it contracts, or is again emptied, when the heart ceases to act. This, however, is far from being the case, at least in any considerable degree. In a quiet state of the circulation, the diameter of the artery, even at the wrist, undergoes but little change, such in fact, as is often imperceptible; yet when the sides of the artery are pressed together with the finger, a considerable stroke is felt. In old people, the temporal arteries are often of a large size, and run very superficially. I have often looked at these very attentively, without being able to perceive the least dilatation or contraction in them, although they pulsated strongly when compressed. Elasticity in arteries cannot explain this circumstance; it can only be accounted for, on the admission of a muscular power in the artery, as well as in the heart. This power it is, which enables them to resist distention, so as to preserve their calibre, when the blood is propelled into them by the heart, and by the exertion of which a fresh impulse is given to the blood. The *vis a tergo*, therefore, instead of producing an enlargement of the calibre of the artery, is expended in propelling the fluid onwards; and this effect is promoted further, by the muscular exertion of the portion of artery immediately concerned.

The examination of the pulse is a thing of some importance, and must not be hastily made; otherwise we shall acquire a very imperfect notion of it. If our object were merely to count the number of pulsations, it might easily be effected. But there are other qualities, besides that of frequency, which are not quite so easily ascertained. In order to make a satisfactory examination of the pulse, much attention is necessary. Two or three fingers should be applied upon the artery, in order to judge of the different qualities of the pulse; and it requires a minute or more to satisfy ourselves on this head. The finger should be withdrawn and then re-applied. The artery likewise should be examined higher and lower in the limb.

We in general choose the radial artery for examining the pulse, and that for sufficient reason. The artery here, is of considerable size. It is superficially covered, and lies upon a flat surface of bone, which enables us to form an accurate judgment of its various qualities. The information we derive from the pulse, even in health, is of no small importance. It enables us to judge of the general strength of the system, and its degree of irritability. And in diseases, it furnishes us with a great variety of useful knowledge, both in regard to their existence, diagnosis, prognosis, and treatment; as you will presently understand.

Of the various qualities of the Pulse in Health.

More attention has been paid to the frequency of the pulse, than to any other quality. This, however, is only one of many, that require to be attended to; and it is also one of the least important: for very considerable differences exist in regard to the frequency of the pulse, which are yet compatible with health.

The healthy qualities of the pulse requiring to be noticed, are principally the following:

1. Frequency.
2. Fulness, or volume.
3. Strength.
4. Regularity.

These, as well as the morbid conditions of the pulse, depend partly upon the heart, partly upon the arteries themselves.

1. *Frequency* of pulse is estimated by the number of pulsations that take place in a minute. There is great latitude in this respect, in different individuals, and at different times, even in health; the pulse being liable to vary from 60, or even less, to 130 or 140, in a minute. The circumstances which appear to determine the frequency of the pulse in health, are *age*, *sex*, and *individual constitution*: but there is much latitude with respect to each of these.

In men of from 30 to 40 years of age, and of middling stature, the ordinary range of the pulse is from 65 to 85. In old men, it is usually about 60. In infants, immediately after birth, it is as high as 130; and, for the first five years, generally above 100.

In females, *cæteris paribus*, it is commonly from 5 to 10 strokes more in the minute, than in males.

Individuals, also, differ much, one from another, in regard to the number of the pulse. In some, it is at all times below 60, in others, above 100, and this consistently with good general health. I have known it, in one individual, as slow as 30 in a minute; and instances are recorded, of its being still slower.

The frequency of the pulse is, in general, from 5 to 10 strokes less in the recumbent, than in the erect posture; and

in the sleeping, than in the waking state. The pulse is commonly less frequent in the morning, than in the latter part of the day.

Muscular exertion, of all kinds, even that which is required to keep the body erect, renders the pulse more frequent, by accelerating the return of blood to the heart. Many emotions of the mind have a similar effect. The taking food, also, renders the pulse more frequent.

Generally speaking, we have no power of influencing the pulse voluntarily: but some have acquired this power in a considerable degree. I have known a medical man, who, by merely willing it, could, after a little while, increase the frequency of his pulse to double the former rate.

As the frequency of the pulse is determined by the action of the heart, it serves to show the state of this organ, in respect to its irritability, or disposition to contract. This, again, may depend upon its own innate disposition; or upon occasional changes in the supply of nervous power, which it receives from the brain, as the chief source of nervous energy.

The condition of the pulse as to frequency, appears to have an influence on the disposition to certain diseases, and likewise on their tendency, and result. Thus persons, having naturally a very frequent pulse, are more liable to fall into disease of most kinds, but especially inflammation. And when disease actually arises in such, it proceeds more rapidly in its course, than in the opposite circumstances. *Phthisis pulmonalis*, for example, is more likely to take place in persons of naturally frequent pulse; and proves fatal in such, in a shorter space of time. Hence we can judge, in some degree, of the probable duration of the disease, from the degree of frequency of the pulse.

2. *Fulness* of pulse denotes the size of the artery, and of course the quantity of blood contained in it, at the time of examination. It shows, at the same time, the degree in which the artery is *tonically* contracted. To understand this, you must advert to the double muscular action, of which I have told you arteries are capable.

Fulness of pulse is increased by external heat, by internal stimulants, and by exercise. Opium also, and other narcotics, have the same effect. These causes act probably in different ways; the former, viz. heat, stimulants, and exercise, by increasing the *propulsive* action of the arteries; the latter (*narcotics*,) by diminishing the *tonic* contraction of them.

Fulness of pulse is diminished by *cold* externally applied, by acids, and the other medicines termed *sedatives*; and likewise by fear, and terror. These causes of diminished fulness of pulse appear to act, by increasing the *tonic* contraction of the vessels. The fulness may be diminished also, by lessening the general quantity of blood in a considerable degree. This acts partly by an increase of the *tonic* contraction, which is necessary in order to bring the sides of the vessels in contact with the blood.

Fulness of pulse does not in general show the quantity of blood in the system altogether; it merely indicates the quantity circulating in the limb or part under examination. Hence, it is not a sign of general *plethora*; nor, on the other hand, is *smallness of pulse* a proof of a deficiency of blood in the general system; as is proved by the circumstance, that the pulse often becomes much fuller after blood-letting, than it was before.

Fulness, therefore, rather indicates the determination of blood to a particular part; and this is necessarily attended with a proportionate deficiency in other parts.

If it could be ascertained, that there was a corresponding fulness in every part of the vascular system at the same time, it would show a plethoric state; but this cannot be done. A sense of fulness and oppression, however, may exist about the heart and lungs; and if this were accompanied with continued fulness of pulse, it might serve in some degree to indicate plethora. On the other hand, a general diminution in the size of the arteries throughout the body, if it could be ascertained, would show a deficiency of the vital fluid.

3. *Strength of pulse* is denoted by the force required to compress the sides of the artery together, so as to stop the current of the blood through the vessel. It is occasioned partly by the force with which the heart is acting, and partly by the force of action in the artery behind, or nearer to the heart.

It is a tolerably certain criterion of the general strength of the system. Nevertheless, a weak system may have the pulse made to beat strongly for a short time, as by the exhibition of powerful stimulants; but it will be unable to continue it for any length of time. A strong pulse, therefore, is only a criterion of general strength, when it is permanent.

The strength of the pulse is *increased*, for the most part, by the same causes as

increase its frequency and fulness; while it is *diminished* by loss of blood, abstinence, and all preternatural evacuations to any great extent.

A *weak pulse* in disease, while it shows a feeble action of the heart and vessels, is very generally accompanied with general weakness of system; this circumstance renders it necessary, in such cases, to be cautious in the use of bloodletting, and other debilitating means.

4. *Regularity of pulse* consists in the strokes following one another at nearly equal intervals, and with an equal degree of force.

Regularity is the natural state of the pulse in health; but now and then it is irregular, in one or both the respects mentioned above; and that without any disease appearing to exist at the time. In these cases, it sometimes happens, that the pulse becomes regular when disease takes place, and returns to its irregular state as the disease ceases.

Regularity of pulse generally shows a regular action of the heart. But the heart sometimes beats very irregularly, without producing irregular pulse; as occurs in palpitation. This serves to show the influence of the arteries on the movement of the blood.

I shall now speak of the changes which the pulse undergoes in disease, and endeavour to explain to you the causes of such changes, with the indications they suggest.

In the writings attributed to Hippocrates, little notice is taken of the pulse, as a sign in diseases. The physiology of the arteries was then little if at all understood. They were not even known to be blood vessels, but were considered naturally to contain air, as their name indeed implies. Galen, on the contrary, paid great attention to the pulse; and from his time, it has been much studied, and relied upon. On this subject, I am desirous of recommending to your particular notice, the late Dr. Parry's "observations on the arterial pulse," who has treated it in a very luminous manner; a character which applies indeed to all his pathological writings.

There are various morbid states of pulse which require to be noticed, and explained; as they throw much light upon the *nature*, and, in some cases, even the *seats* of diseases; while they enable us often to form an opinion as to the event, and also materially assist us in the treatment of them. This, however, is not always the case; as diseases may be dangerous without materially disordering the pulse; and in such cases, it, of course, cannot be our guide in practice.

As the various morbid alterations of the pulse, are merely deviations from the natural or healthy state of it, and only to be known by comparison with this, it is plain that a knowledge of the pulse in health should be first attained. For this purpose, you should accustom yourselves to examine the pulse in different individuals, and under all circumstances; in order to have a standard for comparison in your minds, when you come to examine it in disease.

The morbid conditions of the pulse that require to be particularly noticed are the following:—

1.—Excessive frequency.
2.—Quickness.
3.—Fulness.
4.—Strength.
5.—Hardness.
6.—Regularity.

And their opposites—

1.—Slowness.
2.—Sluggishness.
3.—Smallness.
4.—Weakness.
5.—Softness.
6.—Irregularity.

1.—*Frequency*, (*pulsus frequens.*) Too great frequency of the pulse depends upon too frequent an action of the heart, and shows the irritability of this organ to be in excess.

The excess of irritability may be owing to disease in the heart itself, as inflammation, or its consequences; or it may arise from an excessive supply of nervous power derived from the *brain*, as often happens in inflammatory states of this organ: as fevers, hydrocephalus, and other forms of inflammation in the brain in the early stage of the disease, before *oppression* has taken place.

Inflammation, wherever seated, has often the effect of rendering the pulse præternaturally frequent. Hence, *frequency* of pulse always excites a suspicion, that inflammation may be going on somewhere, as its cause. But this is not to be implicitly relied upon; because great frequency of pulse may be owing merely to general irritability.

Some have said, that the pulse may be of different degrees of frequency, in different parts of the body; as in the two wrists. But this is neither sufficiently proved, nor is it probable. The frequency of the pulse being derived from the heart, must of necessity correspond with

this in point of frequency—with the exception, however, of palpitation, which I just now alluded to; where the heart beats more frequently, than can be felt at the wrist.

Slowness, (*pulsus rarus*,) is the counterpart of *frequency of pulse*, and indicates deficient irritability of the heart, and often of the whole system. *Slowness* of pulse seldom arises from disease in the heart itself; because, with few exceptions, originally-diseased parts have their irritability increased, rather than diminished.

Morbid *slowness* of pulse is almost always the result of an oppressed state of brain; which it therefore generally serves to indicate. *Spasmodic* pain, however, as that produced by the passage of gall-stones, sometimes renders the pulse slower than natural. And thus we are occasionally able to distinguish *spasmodic*, from *inflammatory* pain, a point of great importance in practice.

It is necessary to bear in mind, that the pulse may be rendered slow by *narcotics*, as opium; but more especially, by the *digitalis*: the use of which, therefore, ought to be inquired into, where the pulse is found to be prætornaturally slow.

Both *frequency* and *slowness* of pulse, depend upon the heart, and not upon the arteries.

2. *Quickness of pulse* (*pulsus celer*, a sharp pulse,) is not to be confounded with frequency. Frequency is measured by the number of pulsations in a minute. *Quickness*, alludes to the suddenness of the strokes, leaving a longer interval between them. A pulse may be *frequent*, without being *quick*; or *quick* without being *frequent*; or both together.

Mere *frequency* of pulse often exists in health; but *quickness* is always indicative of disease. It seems to arise from too great irritability of the arteries, rather than from the heart. It is generally produced by inflammation, which it serves to show the existence of.

Sluggishness of *pulse*, (*pulsus iners, vel tardus*;) is the reverse of *quickness*. The stroke is longer in being made, and there is consequently little interval between the strokes. It seems to be that which some have termed "a *labouring* pulse."

This state of pulse, generally, is produced by an oppressed state of brain. *Slowness* and *sluggishness* are not precisely the same, nor do they necessarily exist together. This state of pulse shows an indisposition in the arteries to contract, a want of irritability in them; while *slowness* is rather an affection of the heart itself.

3. *Fulness* of *pulse* in a morbid degree, is the result of a strong action of the heart and arteries in general, with a disposition to relaxation in the particular part where the fulness exists. In other words, the *propulsive* action is going on strongly, while the *tonic* contraction is small.

This disposition to relax, or to receive more blood, in the artery, constituting *fulness* of pulse, is not at all inconsistent with an increase in the *oscillatory* or *propulsive* action of the vessel: for where the circulation is the strongest, the arteries of the part are usually the most dilated.

There is probably no universal state of morbid fulness, or plethora, so as to endanger rupture. If the arteries are partially distended in some parts, they will be less so in others. *Fulness* of pulse, therefore, merely shows an increased determination of blood to the part where an examination is made; and this again is the consequence of increased *propulsive* action, combined with a disposition to relax in the arteries of the part: that is, a diminution of the *tonic* contraction.

Such a state of pulse may at any time be produced by the *hot-bath*, even in weak subjects. But in these, it soon ends in syncope.

LECTURES

ON SOME

PRACTICAL POINTS OF SURGERY,

DELIVERED TO THE

Students of the late Borough Dispensary,

By MR. ALCOCK.

Lecture IX.

Of Fractures.

Gentlemen,

Few subjects are more important to the welfare of the patient or to the reputation of the surgeon, than the tratment of various fractures to which the bones are liable.

If, instead of perfect recovery, lameness or deformity should result, the patient becomes a walking memorial of the surgeon's want of skill; not to mention

that pecuniary damages have been awarded in courts of law against surgeons who have had the care of such patients.

I believe that some of the instances which have occurred have been oppressive, and consequently unjust, in the amount of retribution; for I cannot find that in any case the difficulties inseparable from the nature of the accident have been clearly pointed out, nor how much of the recovery or failure in such cases depends upon the perfect compliance on the part of the patient to such directions as the surgeon may have judiciously given.

While it is well known that deformity and lameness frequently occur in hospital practice, in cases which under favourable circumstances are perfectly manageable, and that this result has taken place under the sanction of the highest names in the profession, it seems hard upon the humble individuals who have no such opportunity either of acquiring a competent knowledge, or of obtaining the full and efficient means of treatment which hospital practice should afford, that they should suffer for errors of judgment, which pass unheeded when they occur to those who have much fewer claims to indulgence. Whilst the difficulties opposed to anatomical pursuits in this country, render it almost impracticable to a student of ordinary means to obtain a sufficient foundation in the knowledge of the structure of the body, without which surgery cannot be safe or efficient; the examiners virtually declare, by refusing any certificates of anatomical or surgical studies in foreign countries, where every facility is afforded, that the shadow of knowledge when the fees which lead to it flow into certain favoured channels, is more to their taste than the actual possession of the necessary knowledge obtained from other sources.

If a magistrate commit an error in judgment, without sinister motive, he is borne harmless; but in some of the instances alluded to, there appears to have been no distinction or contrast made between errors in judgment, or the influence of circumstances which the surgeon might be unable to control, and the injury resulting from culpable ignorance or wilful neglect. In some remote situations in the country, it is to be feared the emoluments of the medical practitioner do not exceed those of the labouring mechanic in London, while the circumstances of the patient and the distance from adequate surgical skill may preclude the benefits to be derived from consultations in cases of doubt or difficulty; to expect under such circumstances the most perfect attainments or successful results, would not be less absurd than to suppose that the pittance paid to a day-labourer could command the intellectual exertions of a Watt, a Smeaton, or a Rennie.

The principles which relate to the treatment of fractures are few, and sufficiently simple; but the application of these principles, and the mode of carrying them into effect, admit of almost endless variety. That all the arts have one common bond of union, is a truism which has not been controverted from the days of antiquity to the present time, and in nothing does this connexion apply more strictly than to some parts of surgery. Besides the general cultivation of the intellect, which is essential to accurate and ready observation, the structure, the mere mechanical structure of the human body cannot be understood, without some previous knowledge of the principles of natural and experimental philosophy; and who should be considered capable of adjusting the complicated structure of any machine, who did not understand the manner in which these parts acted upon each other, their relative power, &c.? What does it signify to be told that a muscle acts upon a bone as the power applied to a lever of the first or third order, if the student do not comprehend what a lever is, or what are the distinctions of the various kinds? Or what is the safety of a patient in the hands of a surgeon using the mechanical power, the pullies or the screw for instance, and ignorant of the stupendous increase of power gained (although at the expense of diminished velocity) through these means.

The principles applicable to the treatment of fractures are, 1st, to restore the displaced parts to their natural position; 2odly, to retain them in that position, that re-union may take place; and 3dly, that the means used should always be the most gentle that are consistent with the welfare of the patient.

The injury inflicted in complicated fractures is sometimes so great, that it would not be safe to attempt the restoration of the part, and amputation then becomes the only resource; but at present we must consider those accidents which admit of recovery under proper treatment.

Restoration is the work of nature and not of the surgeon, all which the latter can do, is to prevent or remove those impediments which might interrupt or destroy the healing or restorative process.

I would much rather induce you to think and to reflect upon those accidents or diseases, the treatment of which forms

the duties of surgery, than to suppose any instruction, which I or any other teacher can convey, can be valuable to you without the exertion of your own minds upon the subject; there is no royal road to surgery any more than to geometry or other branches of science.

Let us suppose one of the simplest and most frequent of fractures, that of the clavicle, or collar bone, which, simple as it may be, is very often productive of deformity, and endeavour to lead you to that careful and patient inquiry which should form the basis of your treatment.

How does the accident occur? (1.)

How do you ascertain the nature of the injury? (2.)

What are the distinctive signs? (3.)

With what other injury is it likely to be confounded? (4.)

What errors have been known to occur respecting this fracture, that we may be upon our guard to avoid their recurrence? (5.)

Having satisfied yourselves of the nature of the injury, what are the principles which should guide you in the treatment? (6)

What are the difficulties to be overcome? (7.)

This leads to the analysis of the powers which act upon the displaced fractured portions, so as to remove them from their natural situation; what are they? (8.)

In what direction do these powers act, and how are they to be counteracted? (9.)

The replacement of the parts to their natural situation is easy and simple; but how are they to be so retained? (10.)

In the choice of means what are the most effectual? (11.)

If several of equal certainty present themselves, which are those least likely to be detrimental to the patient? (12.)

Then again it may be necessary to consider, if the best means cannot be obtained, what substitute can be found, still sufficient to answer the rational indications of treatment? (13.)

Sometimes elegancies of apparatus may be desired, which may divest the treatment of any unsightliness of appearance. Care must be taken not to allow any attempt at elegance of apparatus to deprive you of the use of more effectual means.

What are the means in common use? (14.)

Do they fulfil the indications? (15.)

In what are they defective? (16.)

What are the occasional ill consequences? (17.)

What the result of perfect treatment? (18.)

What time may be expected to elapse before re-union, or what the vulgar call "the cure," be completed? (19.)

(1.) The fracture of the collar-bone may be the result of direct violence upon the part, but is more frequently the consequence of a fall or blow upon the shoulder, which, forcing the outer end towards the sternum, breaks the arch in the same manner as a bow is broken when too much or too suddenly bent.

(2.) The loss of power of free motion of the arm and shoulder, in all directions, is immediate, whilst the falling down of the shoulder below its natural level is sufficiently obvious to any one whose attention may be directed to it.

(3.) The distinctive signs, in addition to the above, are loss of continuity in the fractured part; the change of position of the outer portion on moving the shoulder, whilst within several days after the fracture there may be observed crepitus, or grating of the fractured portions upon each other.

(4.) This accident has been mistaken for dislocation, and very unnecessary violence used in consequence; but the overlooking it altogether, or mistaking the bruise of the shoulder as the only injured part, is of more frequent occurrence. In children, particularly, those who depend upon the crepitus as the distinctive sign, are apt to be mistaken, and, without great care in the examination, the fracture may be passed, unheeded, till the swelling, by one end passing over the other, may render it too conspicuous to conceal the error.

(5.) The most frequent error has been already pointed out. (4.)

(6.) The principles relating to fractures in general, viz. to restore the natural position and so to retain it.

(7.) The difficulties apply less to the reduction of the displaced parts than to retaining them in the proper position when reduced.

(8.) The weight of the limb, when the support of the clavicle is destroyed by its fracture, is a very constant cause of displacement, added to which the action of those muscles which draw the arm and shoulder downwards, are more powerful than those which act in supporting it, whilst the clavicle itself is the only power opposed to the action of those muscles which draw the shoulder towards the chest. The outer portion is generally depressed and carried somewhat under the inner or sternal portion of the bone. (Mr. A. exhibited a cast from a fracture of the clavicle, in a strong man, which was very characteristic of the manner in which one portion of bone overlaps the other.)

(9.) Hence it will be found that the displacement takes place downward, inward, and forward, consequently the means used must act in the opposite direction, namely, outward, upward, and backward.

(10.) The replacement of the parts may be easily effected by the hands of the surgeon, and this should be regarded as the measure of the least force by which the replacement and retention of the parts in their natural situation may be effected. I have elsewhere shown, that the power used in the treatment of fracture of the patella is frequently excessive and injurious; in like manner I have witnessed the strength of a powerful man exerted, with his knee between the shoulders of the patient and one hand upon each shoulder, pulling them backward to the utmost, whilst others have been employed in strapping and binding back the shoulders in this painfully constrained and unnatural position; the consequences might be easily foreseen—inability to sustain the position, much pain from the galling of the apparatus, and ulceration at the edges of the armpits, on which the chief pressure of the apparatus rested. Moreover, the binding of the shoulders backwards, however forcible, does not restore the natural position of the fractured bone, the shoulder still approaches too near to the chest and the line of direction of the fractured portions does not correspond.

(11.) In the choice of means, the simple use of bandages and compresses may be made to answer every indication of treatment, as perfectly as any more complicated apparatus; they should be made to act, as before stated, so as to carry the outer fragment of the fractured bone in the direction backward, upward, and outward, and should not be applied with that degree of force capable of galling or giving pain to the patient; if all be properly adjusted, the total absence of pain will be the criterion.

(12.) Straps and buckles are sometimes substituted for the use of bandages, but do not admit of so perfect an adaptation as may be effected by the careful and neat application of bandages; the pressure is more diffused by the latter, and consequently less irksome.

(13.) If bandages cannot be procured, as in country practice sometimes may happen, when the surgeon is not aware of the nature of the accident before leaving home, a temporary support may be made by handkerchiefs and compresses, sufficient to prevent mischief.

(14.) The means in common use are the figure of 8 bandage, which is wholly inefficient.

(15.) & (16.) The defect in fulfilling one only of three indications, is obvious, not to mention that it does not afford that steady support to the whole limb which is essential to perfect union.

(17.) The occasional ill consequences, appertaining to the injury, are sometimes extensive extravasation from the wounding of the contiguous vessels by the points of bone; but this is much less frequent than from their situation might be expected.

The occasional ill consequences relating to the treatment are, the galling, excoriation, or ulceration of the soft parts, if the bandage or apparatus be too forcibly or too partially applied; the deformity which very frequently results when the broken ends of the bone have not been retained in their natural position; and occasionally another circumstance, which I have not known to be described by authors, namely, the formation of an artificial joint at the place of the fracture, which is attended with permanent weakness in some of the motions of the arm.

(18.) The result of the perfect adaptation of the means to the end, is, that union takes place with so little deviation from the natural form, that it would be difficult to ascertain that fracture had existed; at other times a very slight irregularity at the place where the fracture existed, may be sufficient to indicate the point of union. Although I have known the strength of the limb to be preserved where considerable deformity has remained, it never occurs, unless there be some imperfection in the means used, or on the part of the patient. In females, it is important to avoid this deformity, as in the present mode of dress it can scarcely escape observation.

(19.) The period, in the adult, before union be firm enough to admit of the unrestrained use of the limb, is generally six weeks; in children, from four to five weeks will suffice; but it is better to continue the support a few days longer than absolutely necessary, rather than to have to recommence the treatment. It is of some moment to the reputation of the surgeon to be able to state with precision the time necessary for the treatment of fractures under various circumstances.

Mr. Alcock demonstrated upon the living figure the mode of applying the apparatus for the treatment of fracture of the clavicle, showing, step by step, that the indications of treatment may be fulfilled, the figure of eight bandage being sufficient to carry the shoulder backward,

whilst the direction outward was supported by using a wedge-shaped compress, extending from the axilla downwards, which served as a fulcrum, the arm being used as a lever of the first order, and confined to the side to maintain the position, whilst the direction upward was sustained by a sling, and the bandage passing under the elbow, and crossing to the opposite shoulder. Mr. A. remarked, that as far as mere mechanical principles were concerned, the use of a fulcrum, as near the head of the humerus as practicable, and the using of the arm as a lever, were all that might seem necessary; but in reference to the living body, the fulcrum must not be a point, but diffused over a considerable surface, whilst the pressure upon the vessels at the upper and inner side of the arm, however moderate, must be accompanied by a correspondent degree of support to the lower part of the limb by the bandage.

Mr. A. further elucidated the necessity of precaution on the part of the patient, when all that depended upon the surgeon had been attended to, by instancing, that unless the patient were cautioned not to rest upon the fractured side, the parts might suffer displacement; the degree of firmness sufficient to preserve the parts in their natural relation in a passive state being wholly inadequate to sustain the weight of the body in addition to the resistance of the muscles, which, with the weight of the limb in the erect or sitting position, was all that the apparatus should be designed to counteract. The adjustment of the apparatus from time to time, during the period of treatment, should it become deranged, is as essential as its application at first. Some complain that the bandages are liable to be displaced; of such it may be asked, do they quarrel with a good dinner because it will not supersede the necessity of eating for a month?

Fracture of the Ribs.—This accident is generally produced by a direct blow or contusion at the fractured point. Sometimes it occurs from pressure of the sternum inwards, but in such cases the injury is so great, as very soon to destroy the life of the sufferer. When one, two, or three of the ribs suffer fracture, without extraordinary violence, recovery, under favourable circumstances, takes place as readily as in other fractures; but from the constant motion of the ribs in respiration, suppuration and caries have been known to supervene when no remedial treatment has been had recourse to.

The examination of a patient, when it is doubtful whether any of the ribs are fractured or not, is to trace each rib from the spine forwards, by pressing with the fingers, and if pain be felt at any particular point, to place the fingers over that part, and to make pressure on the anterior part of the rib, when, if fracture exist, it will generally be discovered by the crepitus; crepitus may also be discovered on coughing, sneezing, &c., but as these efforts are attended with pain, they should be avoided when the rib is fractured. Sometimes the end of the fractured rib wounds the lung, in which case emphysema takes place; sometimes the laceration of the intercostal vessels gives rise to effusion of blood within the chest. Mr. Charles Bell, in his "Surgical Observations," published in 1816, relates an impressive instance of emphysema terminating fatally under circumstances, which forcibly illustrate the evils of suffering an ignorant pupil to assume the office of surgeon.

The treatment of fracture of the ribs, when not complicated by injury of other parts, consists in guarding against inflammation, and in keeping the ribs in a quiescent state by the support of a bandage, till union may take place. Care must be taken in applying the bandage, not to compress the abdomen, as by preventing the motion of the ribs, the patient can only breathe by the diaphragm, which, I need not tell you, alternates with the abdominal muscles in each act of respiration. The want of thought in binding up both chest and abdomen, when the only rational indication of treatment was to support the ribs, has been productive of much distress; and the use of cold lotions under such circumstances need only be mentioned to be avoided. The following case may be noticed in reference to the defect above alluded to.

An elderly man laboured under fracture of two of his ribs; a bandage had been applied not only to the chest, but also surrounding the abdomen; and this bandage had been kept wet for some days by lotions. Bronchial inflammation, as might be expected under such circumstances, supervened, and the patient died. Inspection after death was permitted, to which a surgeon, who had seen the patient once during his illness, was invited. He arrived just as the examination was said to be finished, but without any satisfactory result; there being none of the common marks of inflammation of the chest, (pleura,) and the abdominal viscera being tolerably healthy. He inquired what was the state of the air passages? They had not been looked at. He requested leave to examine them, and

found the bronchia and their ramifications filled with a fluid of a puriform appearance. The lungs were loaded with similar fluid, which copiously exuded, mixed with a portion of air, on pressing any part of which a section had been made. The bronchial lining was much inflamed, but there was no ulceration. Thus the unexplained cause of death became apparent!

Mr. A. demonstrated the mode of applying the bandage in fractures of the ribs, stating that caution was required not to use greater pressure than needful, lest the fractured ends of the ribs should be forced past each other.

FOREIGN DEPARTME NT.

ANALYSIS OF FOREIGN MEDICAL JOURNALS.

ROYAL ACADEMY OF MEDICINE, PARIS.

Sitting of December 13.

Section of Medicine.—Absorption; Cupping Glasses; Animal Magnetism.

THE report of M. Adelon on the memoir of Mr. Barry, of which we have before spoken, came on for discussion at this sitting. M. Itard commenced the discussion by some general remarks on absorption; it is said in the report, that a part in a state of irritation does not absorb, which is contrary to daily experience—mercurial frictions for example, are not they attended with irritation? and in every puncture or wound on which a poison is deposited for the purpose of absorption, is there not an irritation induced? M. Itard thought, moreover, that there were not sufficient proofs to justify such a general conclusion. The venom of the viper is not transmitted with the same facility as certain other poisons; it is not reproduced in the system as the vaccine, variolous, or syphilitic virus is; and in conclusion he considered that further experiments ought to be made with the vaccine virus. M. Adelon replied that the opinion inserted in the report on the suspension of absorption in an irritated part was only a supposition made by one member and which the commissioners had not adopted as positive.

M. Burdin read a note on absorption in which he questions the theory which supposes a virus or poison to be introduced through the system generally. He (M. Burdin) thought that the poison acted locally on the nerves of the part, without getting into the circulation; and he further compared the secondary action on the remainder of the nervous system to an electric action; he consequently looked upon the theory of Mr. Barry as hypothetical, which supposed the poison was withdrawn, or extracted by means of the cupping glasses.

M. Adelon said in reply, that the Commission was of the same opinion as M. Burdin, as to the pretended extraction of the absorbed poison. But as to the absorption of poisons in general, he (M. Adelon) did not think it could be denied, since absorbed substances have been found in the humours.

M. Marc confirmed the opinion of M. Adelon, and cited the fact of iodine being found in the urine.

M. Castel next read some long observations on contractility.

M. Orfila remarked, that even to the present time, arsenic had not been found in the blood; which is correct; but Tiedman and Gmelin have found in the blood of the system of the vena portæ, prussiate of mercury, which is a poison not less powerful. Besides, although arsenic has not been found in the blood, it would be premature to conclude that it had not been absorbed.

M. Segalas cited some new facts in confirmation of this opinion; if, said he, in a wound of either extremity, we place any poisonous substance, such as strichnine, and stop the circulation by compressing the vein, the poisoning does not take place; it, however, shows itself, notwithstanding we paralyse the limb by the division of the nerve, or by destroying the spinal chord. It is then undoubtedly by absorption that the introduction of poison takes place; and this, he said, was proved by numerous experiments.

The report and its conclusions were therefore adopted. The Sitting terminated by the report of the Commission charged with examining "If it is necessary that the Academy should occupy itself with the subject of animal magnetism?"

This Commission was composed of

Messrs. Marc, Adelon, Pariset, Burdin, and Husson: the latter reporter. The conclusions of the Report were, 1st. That the judgment given in 1784, by the Commissioners appointed by the king to investigate this subject, ought not to deter the Academy from entering on it anew. Since in medicine no decision or judgment is to be regarded as absolute or irrevocable. 2dly. That moreover magnetism, considered in 1784, differs entirely in its theory, proceedings, and results, from that of modern observers. 3dly. That it is to the honour of the French school of medicine not to be in the rear of the German physicians in the study of the phenomena of magnetism. 4thly. That in considering magnetism as a secret remedy, it is the duty of the Academy to study it for the sake of doing away with the secret and dangerous monopoly of those who exercise it in ignorance.

The discussion of the Report was adjourned to the next Sitting.—*Gazette de Santé*, Dec. 25, 1825.

Yellow Fever.

While the medical world continues to be disturbed by that irreconcileable subject—that *bugbear* to the profession—Contagion, it is with no little pleasure that we lay before our readers the Report of the French Academy of Sciences on this hacknied question. The cool and dispassionate manner in which it has been investigated does credit to the members, and is well calculated to conciliate the absurdities of the *Ayes* and the follies of *Noes*.

M. Dupuytren read a report on the memoir of MM. Lassis, Costa, and Lasserre, relative to yellow fever, and some new experiments on the contagious nature of the malady. He commenced by showing the opposite opinions entertained as to the way in which yellow fever, as an epidemic, is thought to be propagated.

"In the theory of contagion," observed M. Dupuytren, "it is allowed that the malady, carried to its height, is capable of giving rise to a *miasm*, a sickly principle, a true germ, which escapes from the bodies of the sick, and preserves the power of reproducing the malady, with all its concomitant symptoms."

"In the theory of infection, on the contrary, it is contended that the malady can never propagate itself but under the influence of causes which are capable of producing it primarily, as heat and moisture, impure air, putrid exhalations, in places where the air cannot renew itself easily; these are considered as causes always indispensable for the reproduction of yellow fever."

"If the germ, or *effluvium* of the contagionists," continued M. Dupuytren, "really exists, that man will be rendering an incalculable service to mankind who will, in a clear way, point out the mode by which we can assure ourselves of its presence.

"It is not necessary to say, that in accordance with the idea which they form of the malady, diametrically opposite measures are called for to prevent the propagation of its ravages; sequestration effected by every sort of means, sanitary cordons, and lazarettoes, are a consequence of the theory of contagion, whilst the dispersion of the sick ought to be directed by the exclusive partisans of infection."

M. Dupuytren concluded these general remarks by observing, that if the theory of infection appeared more simple and seducing, since it admits but of one cause, that of contagion seems better calculated for the explanation of detailed facts.

He next reviewed the principal peculiarities in the epidemic of Barcelona, and the discrepancy of opinion which exists between those who have written on it.

The Commissioners of the Academy, after having weighed with the most scrupulous attention the arguments adduced on both sides, considering the dangers which accrue from too hasty decisions, think, that they cannot decide, with certainty and security, that yellow fever is never contagious; and that great thanks are due to the supporters of both theories for their ardent zeal in the inquiry for the truth.

As to the sanitary measures which have for so long a time existed, they certainly ought not to be abolished entirely, until it should be mathematically (*mathematiquement*) shown, that contagion was but a chimera. M. Costa, nor any other opponent of contagion, has given this proof, and it becomes necessary in consequence to maintain them; yet the dis-

cussion has thrown on this important subject a light which can guide us in practice. The noncontagionists have represented truths which will be attended with useful consequences.

Relative to *sanitary cordons*, living walls erected between a population regarded as infected and one that is not, their use ought to be maintained; but instead of forming them in a manner so as to concentrate the malady in the place where it reigns, a range ought to be given, so sufficiently extensive, as that those so enclosed could find places more salubrious whereto they might emigrate. And what is more, it is now proved, that the evacuation of places, in which yellow fever breaks out and increases, is absolutely necessary; for experience has undoubtedly shown, that when such measures are neglected the concentration of the sick adds to the other numerous causes of insalubrity which previously existed, and a mortality results which destroys a third, or even half, of the population.

It ought not to be left to such a population whither they would go, but proper limits should be assigned which they could not pass. Salubrious spots should be selected by them, and they should take care to reside more under tents than in close houses. The greatest efforts to obtain the complete evacuation of sick towns are highly justifiable, by the happy results which have attended such measures, and from the severe lessons of the past.

With respect to infected vessels, whether they are considered floating morasses (*marais flottans*), or whether they are viewed as the focus of contagion (*foyer de contagion*), it is prudent to preserve a healthy population from all communication with them. The *quarantine* ought then to be maintained. But the same reasons advanced relative to sanitary cordons are applicable here; and it necessarily follows that the quarantine should be performed on shore, or at least in some healthy and spacious building for the purpose.

Lazarettoes offer no other inconvenience than as mere shackles to commerce, but this could not be put in balance with the dangers which might result from their suppression.

Arriving at length to the experiments proposed by MM. Lassis, Costa, and Lasserre, M. Dupuytren reviewed these attempts, of which similar ones have been made at different times for the same purpose, but not one is conclusive, because, on the one side, those who have died from these trials found themselves plunged in the focus of infection. It cannot therefore be said, they got the disease by contagion; and that, on the other hand, those who have not been infected might, by some peculiar circumstances, be able to resist the contagious action of *miasmata*.

"Let us add," said M. Dupuytren, "that the experiments are still less conclusive by another reason. In performing them we are too often misled by the different modes that nature adopts in the transmission of virus; each sort of virus has its peculiar mode of transmission; some, as the syphilitic and hydrophobic, are only introduced by inoculation. It is not so, however, with *rubeola* and *scarlatina*, which are conveyed by *effluvia*, and which we should try in vain to produce by inoculation, &c. What is the peculiar mode by which yellow fever is transmitted? We are ignorant of it. It becomes necessary then to try them all. This is not all; it would be proper, in making these trials, to place ourselves in the most favourable *conditions* to the transmission of epidemic maladies, and we are here, if not in complete, at least in very great ignorance."

The conclusions of the report are—

1. That the physicians who have presented themselves as the subjects of experiments are deserving praise for their zeal.

2. That although the experiments, such as they are shown, cannot lead to any conclusive result, yet they ought to be considered as the commencement of a series of proper experiments to the elucidation of the question; and that, viewed in this light, every sanction and encouragement ought to be given them as long as the tranquillity and public safety were not compromised.

The Commissioners of the Academy desire, that a valuable prize should be proposed for the solution of these questions.

The conclusions of the Report were adopted; but as to the foundation of a prize, the Academy will give it mature consideration, and for this purpose the Report of M. Dupuytren is to be printed.

REVIEW.

An Essay on the application of the Lunar Caustic, in the Cure of certain Wounds and Ulcers. By JOHN HIGGINBOTTOM, Member of the Royal College of Surgeons. 8vo. pp. 147. London, 1826. Longman and Co.

If lunar caustic be applied to the surface of a wound or ulcer, it induces, as every one knows, a white film, or eschar, which gradually assumes a dark colour, and at length becomes black and firm like sticking plaster. In the course of a few days the eschar begins to separate, coils up at the edges, and drops off, leaving the surface beneath it in a sound state.—Certain metallic oxides and salts, which produce a somewhat similar effect, were much employed by the ancients in the cure of wounds by incrustation or scabbing; a natural and obvious method, which apparently led to the experiments and practice of the author whose essay we have now to consider.

The first section treats of *the adherent eschar*, upon which the author has the following observations:—

"In the formation of this eschar several things require particular attention. The application of the caustic should be made over the whole surface of the sore; and indeed no part requires so much attention as the edges; to make a firmer eschar, the caustic should even be applied beyond the edge of the wound, upon the surrounding skin, for the eschar, in drying, is apt to contract a little, and in this manner may leave a space between its edges and that of the adjacent healthy skin. At the same time, much attention must be paid to the degree in which the caustic is applied. In cases of recent wounds, unattended by inflammation, it may be applied freely; but when inflammation has come on, too severe an application of the caustic induces vesication of the surrounding skin, and the edges of the eschar may, in this manner, also be loosened and removed. If every part is touched, a slight application of the caustic is generally sufficient."—pp. 4, 5.

It is of great importance that the eschar should adhere, which, from the author's experience, may be effectually secured by covering it with gold-beater's skin. When it perfectly adheres, the sore is completely protected from the air, and, according to the author, *invariably* heals. He particularly recommends the caustic in wounds of the shin, which are often very tedious.

"A blush of inflammation," says he, "forms around the eschar, but this gradually subsides without any disagreeable consequences, and the inflammation, which would otherwise have been set up, is entirely prevented by the due formation of the eschar. If inflammation be previously established, it is increased, at first, by the application of the caustic; but if this inflammation be not severe, and if the eschar remain adherent, all inflammation, both that induced by the application of the caustic, and that existing previously, entirely subsides. *When the previous inflammation round the ulcer is considerable, however, the application of the caustic would induce vesication*, and it should, in such a case, be avoided."—pp. 10, 11.

The author concludes the section by observing, that the treatment by eschar is more efficacious and speedy than any other; that it saves the patient much suffering and inconvenience; and renders the repeated application of dressings and ointments quite unnecessary. These are certainly advantages, but in a variety of cases the treatment is wholly inapplicable, and to these we shall revert hereafter.

"*On the unadherent Eschar.*—The eschar is generally adherent in cases of recent injuries, and in small ulcers, when they are nearly even with the skin and attended by little inflammation. In other cases the eschar is too apt to be unadherent, and this arises from the formation of pus, or of a scab, underneath.

If the eschar be unadherent by subjacent pus, it may be ascertained in the space of from twelve to twenty-four hours; the centre is generally observed to be raised and to yield to the pressure of a

probe; sometimes the subjacent fluid has partly escaped by an opening at the side of the eschar.

When a scab forms underneath the eschar, which does not happen except the fluid has been allowed to remain too long under the eschar without being evacuated, there are pain and some inflammation, the eschar does not separate, but remains long over the sore, and there is no appearance of healing.

When it is ascertained that there is fluid underneath the eschar, a slight puncture is to be made by the point of a penknife, the fluid is to be gently pressed out, and the caustic is then to be applied to the orifice thus made. The same plan is to be adopted if the fluid ooze out at the edge of the eschar; it is to be fully evacuated by pressure, and the orifice is to be touched with the caustic. The healing process goes on best, however, when the orifice is in the centre of the eschar. After this treatment the eschar occasionally remains adherent, but more frequently the fluid requires to be evacuated repeatedly, and this should be done every twelve hours, or once a day, according to the quantity of fluid formed, taking care that the eschar be not needlessly separated by allowing the fluid to accumulate underneath. If, from accident, the eschar is separated before the sore be healed, I would reapply the caustic. At length the eschar becomes adherent, and in due time begins to peel off, leaving the surface healed.

In every case in which the eschar does not separate favourably, I begin to suspect the formation of a scab underneath, in which case the whole must be removed by the application of a cold poultice for two or three days; this has not only the effect of removing the eschar, but of allaying any inflammation or irritation; afterwards the caustic must be reapplied as before.

The gold-beater's skin is more useful as a protection to the unadherent than to the adherent eschar, as the former would be more liable to be torn off by accident than the latter. The gold-beater's skin must be removed in the manner already described, whenever the subjacent fluid is to be evacuated, and must be reapplied after touching the orifice with caustic.

The pain experienced on the application of the caustic is greater or less according to the sensibility and size of the wound. In small wounds it is trifling, and of short duration; it is more severe in recent wounds than in ulcers; it soon subsides in every case, and then the patient enjoys greater ease than would be experienced under any other mode of treatment. Little or no pain is caused on applying the caustic after evacuating the subjacent fluid of an unadherent eschar. Altogether the pain inflicted by the caustic is far less than is generally imagined, and forms scarcely an obstacle to its employment."—pp. 14—19.

"*On the Treatment by Eschar and Poultice.*—In many cases in which it is impossible to adopt either the mode of treatment by the adherent or the unadherent eschar, it is of great utility to apply the caustic first, and then a cold poultice made without lard or oil; this plan is particularly useful in cases of punctured wounds, attended by much pain and swelling, and in cases of recently opened abscesses. By this application the pain and swelling are much subdued, and a free issue is secured for the secreted fluid; and in no case have I seen the original inflammation increased by it.

It is generally necessary to repeat the application of the caustic every second or third day, or every day if the inflammation and swelling of the part be considerable, and the cold poultice may be renewed about every eight hours. At length, however, the inflammation having subsided, the attempt may be made to form an adherent eschar.

I have seen many cases in by which, this mode of treatment, much suffering, and perhaps the loss of some of the smaller joints, have been prevented, particularly cases of deep-seated inflammation of the fingers, which, having been neglected, have issued in severe inflammation, abscess, and terrible fungous growths. In these cases it is not only necessary to apply the caustic to the surface of the sore, but in every cavity or orifice which may be formed by the disease."—pp. 21—23.

The method of eschar and poultice was practised by the antients; but the lunar caustic was unknown to them. See CELSUS, *Lib.* V. Cap. ix. and x.

Of the Treatment of Puncture, &c.

"In cases of recent punctured wounds the orifice and surrounding skin should be moistened with a drop of water; the caustic should then be applied within the puncture until a little pain is felt, and then over the surrounding skin, and the eschar must be allowed to dry. In this manner it is astonishing how completely the terrible effects of a punctured wound are prevented; the eschar usually remains adherent, and the case requires no further attention.

At a later period after the accident, when the caustic has been neglected, some degree of inflammation is usually present, the orifice is nearly closed with the swelling, and a little pus or fluid is formed within. A slight pressure will evacuate this fluid, the caustic may then be applied within the puncture, and over the surrounding skin, beyond the inflammation, and must be allowed to dry. In this manner we frequently succeed in forming an adherent eschar, and all inflammation subsides. Any slight vesication which may be raised around punctured wounds is not of the same consequence as when an adherent eschar is wished to be formed over a sore or ulcer; one or more small punctures may be made to evacuate the fluid and the part may be allowed to dry.

If there is reason to think that an abscess has actually formed under the puncture to any extent, it must be opened freely by a lancet and treated with caustic and poultice, keeping the poultice moist and cold with water.

In cases of puncture where the orifice is healed and where an erysipelatous inflammation is spreading, attended with swelling, I have applied the caustic freely over and beyond the inflamed parts, and I have had the satisfaction to find that the inflammation has been arrested in its progress and has shortly subsided." pp. 24—27.

This method of treatment is certainly applicable in many cases of lacerated and punctured wounds, from nails, hooks, saws, &c., and in the bites of animals, stings of insects, &c. Punctures made in the dissecting room are also very commonly treated with caustic, and most frequently with perfect success. We are, however, inclined to believe that the sooner the eschar is cast off the better, and should therefore cauterize the wound and apply poultices as recommended by Sir A. Cooper. The author's practice will be best illustrated by a few cases.

"Case 1.—A. B. received a severe punctured wound by a hook of the size of a crowquill, which pierced into the flesh between the thumb and fore-finger on the outside of the hand; scarcely a drop of blood followed, but there was immediately severe pain and tumefaction. The lunar caustic was applied without loss of time, deep within the orifice and around the edge of the wound; and the eschar was left to dry. The smarting pain induced by the caustic was severe for a time but gradually subsided.

On the ensuing day, the eschar was adherent and there was little pain; but there was more swelling than usual after the prompt application of the caustic, owing to the mobility of the part.

On the third day the swelling remained as before, and there was a little sense of heat. On the fourth day the swelling and heat had subsided, and the eschar remained adherent. On the succeeding day the eschar had been removed by washing the hand, and the puncture was unhealed but free from pain and irritation. The caustic was re-applied.

From this time the eschar remained adherent, and at length gradually separated leaving the part perfectly well.

It is quite certain that under any other mode of treatment this severe puncture would have greatly inflamed and have proved very painful and troublesome; and it is not improbable but that suppuration and much suffering might have ensued. All this is effectually and almost certainly prevented if the caustic be applied promptly, as in this case. When time has been lost, the case is very different as will appear hereafter; but even in these cases, the caustic proves an invaluable application.

Case 2.—Mrs. Middleton, aged 40, wounded her wrist, on the ulnar side, by the hook of a door post; there was a considerable flow of blood at first, but this ceased suddenly and the arm immediately became affected with great pain and swelling. The lunar caustic was applied half an hour after the accident.

On the following day the eschar was observed to be adherent, and the patient reported that she had suffered scarcely any pain, after the smarting of the caustic had ceased. There was a slight swelling round the puncture, but that of the arm had totally subsided. The caustic was applied over and beyond the swelling. On the third day all tumefaction had subsided and there was no complaint whatever.

I hoped that this case would have required no further attention or remedy. But my patient contrived unfortunately to rub off the eschar about a week after its formation, and so to expose the subjacent wound unhealed; she suffered however no pain or inconvenience from it; and it was again shielded by means of a fresh eschar, which remained adherent until removed by the healing process underneath.

This puncture was so severe that the arm was in a state of ecchymosis for six or eight inches upwards, and I doubt not that without the caustic, there would have been severe and long continued suffering, and perhaps painful suppurations.

Case 3.—A female servant punctured the end of the finger by a pin; there succeeded much pain and swelling, and it appeared that the nail would separate, and the cuticle all round the finger was raised by the effusion of fluid. This fluid was evacuated and a poultice applied.

On the third day the cuticle was removed, and the exposed surface was found to be ulcerated in several spots. The lunar caustic was passed slightly over the excoriated surface, which was then left exposed to dry.

On the succeeding day the eschar was adherent and the pain had almost subsided. On the next day, the eschar still remained adherent, and as there was neither pain nor soreness, the patient used her finger.

The eschar was at length removed by the healing process and was separated together with the nail, and the case was unattended by any further inconvenience or trouble either to the patient or myself.

It is scarcely necessary to contrast the advantage of this mode of treatment with that by plasters, poultices, &c. It is at once more speedy and secure, and less cumbersome to such patients as are obliged to continue domestic avocations." pp. 29—36.

The following case was rather more severe than the preceding, and the caustic was not applied till the day after the accident.

"William Chantry, aged 50, received a stab in the wrist with a hay-fork yesterday, and applied a poultice; to-day there are great pain and swelling, and the wounded orifice is very small. I applied the lunar caustic within the puncture, and directed a cold poultice to be worn over it; the arm was kept in a sling.

The next day the swelling and pain were diminished, and a little lymph flowed from the wound. I again applied the caustic and continued the poultice.

Two days afterwards, the swelling and pain were nearly gone. The poultice was merely continued, the caustic not being requisite from the subsidence of the inflammation. The patient came to me again in four days more, quite free from pain and swelling. The poultice was discontinued, and the caustic was then applied in order to form an adherent eschar, in which I was successful.

This case illustrates many important points; 1. it shows the efficacy of the caustic with the poultice as a remedy against inflammation; 2. it presents an instance of a labouring man returning to work on the sixth or seventh day after a severe accident, even when the application of the caustic had been unfortunately delayed; 3. it points out the proper treatment, when all hope of the treatment from the first by adherent eschar is lost from such delay,—for had this been attempted in this case, suppuration would doubtless have taken place from the closed state of the puncture by the swelling;—our objects must therefore be, to open the puncture and to subdue the inflammation, and these objects are admirably attained by means of the caustic."—pp. 37—39.

Mr. P., aged 30, of a delicate habit, trod upon a needle, which pierced the ball of the great toe. A free crucial incision was made, but the needle could not be found. Poultices and cold lotions were applied to the wound.

"In the course of a week part of the needle came away. He did not rest as he was enjoined to do, and, in consequence, severe inflammation came on, and in two days' time, fluctuation was perceived over the joint, opposite to the puncture; a free incision was made, and some pus was evacuated.

On the following day there was a free discharge, but very considerable inflammation had taken place on the side of the ball of the toe; a free incision was made in this part, and a quantity of pus was evacuated.

On the succeeding day, the inflammation was somewhat abated; but on the next day, it had again become exasperated, and the openings made for the evacuation of matter were somewhat closed by the swelling. I now introduced the lunar caustic very freely into these openings, and re-applied a cold poultice and lotion.

On the following day, I found that my patient had slept well for the first time since the developement of inflammation, and had suffered far less, after the smarting pain from the application of the caustic had subsided, than before; the punctured orifices were open, and the skin, which was extremely tense the day before, was become soft and flexible."—pp. 44, 45.

For a short period it was necessary to apply the caustic about every third day, to keep the wound open. The joint ever afterward remained stiff.

To illustrate the method of treating by caustic those punctured wounds which have been neglected, the author has the following case:—

"B. Unwin, aged 40, washerwoman, applied to me on July the 10th, 1820, with severe inflammation and ulceration of the middle finger, arising from a puncture by a pin or needle some time before; there was much painful tumefaction, and the integuments had burst along nearly half of the length of the finger, on the ulnar side, and over the middle joint on the radial side; the probe did not, however, pass to the bone or into the joint. I applied the lunar caustic deep in every part, and over the whole surface, and enveloped the finger in a cold poultice covered with cold water.

On the 11th she reported that she had slept well for the first time during the last fortnight; to-day there is scarcely any pain, but she complains of soreness; the swelling has greatly subsided. The caustic was again applied, and the poultice and lotion continued.

On the 12th there were still swelling and pain; there was considerable bleeding from the wound, so that I could not apply the caustic well.

On the 13th the swelling and pain were nearly gone. I repeated the caustic, which induced bleeding from the fungous flesh.

On the 14th the swelling had nearly subsided; the cuticle was separating all over the finger. The lunar caustic was applied extensively over the wound and abraded parts, and induced little bleeding or pain.

On the 15th the fungus was nearly removed; the wound presented an appearance of slough over its surface.—The caustic was applied to the remaining fungus.

On the 17th the wound was much smaller and the slough separating. The caustic and cataplasm were applied as before.—A similar report was made on the succeeding day.

On the 20th the slough was separating. The caustic and cataplasm were applied. A similar report was made on the 22d.

On the 24th, the slough having separated, the integuments over it were flabby and loose; the caustic was applied to them.

By a continuation of this plan the wound gradually contracted, and, at length, when there was no further use for the cataplasm, the eschar became adherent, and the sore healed underneath. It appeared highly probable to me that, under ordinary treatment, the finger, in this case, would have been lost."—pp. 48—52.

On wounds received during dissection, he makes the following observations, which, though not altogether novel, may be worthy the attention of students at this period of the season.

"In the years 1813 and 1819, respectively, I was myself exposed to great danger from inoculation during the examination of dead bodies. Since the latter period I have repeatedly been exposed to the same danger from inoculation, but in every instance, the danger has been completely averted by the prompt and free application of the lunar caustic.

The following is the exact mode of treatment which I would adopt in such cases.

In recent punctures the caustic should be applied in the manner already described in cases of simple punctured wounds.

When the case has been neglected, a small tumour is usually formed underneath the skin with smart stinging pain; this tumour should be removed entirely by the lancet, and the caustic should be applied, both to the surface of the wound and over the surrounding skin, to form an adherent eschar.

When the case has been still longer neglected, and inflammation of the absorbents has supervened, a free crucial incision is to be made, the caustic is to be very freely applied, and afterwards a cold poultice or lotion, the usual constitutional remedies being actively enforced."—pp. 53—55.

Bites of Animals.—From the few cases which the author has related we extract the following as the most interesting:

"A servant maid was bitten by a dog in four places, severely on the fore-arm, three days ago. Adhesive plaster had been applied. There is a wound across the arm two inches in length and three-fourths of an inch in breadth, attended by dull pain, and swelling of the arm. I applied the caustic to form an eschar, covering it with goldbeater's skin.

On the following day the eschar remained adherent round the edges, but had a puffy feel in the centre; I pierced it with a penknife and a little bloody fluid escaped, and I touched the orifice thus made with the caustic. The swelling remained as before, with a degree of soreness.

On the next day the swelling had subsided. The eschar had the same character; a little fluid was again evacuated and the caustic applied to the orifice as before.

This mode of treatment was pursued for nine successive days, when the eschar remained adherent in every part.

This patient continued her usual avocations all along. Under any other plan of treatment I think it impossible that she should not have been compelled to rest for a number of days.

Adherent eschars were formed on the other three bites, which were less severe, from the first application.

A very irritable sore sometimes forms after the application of leeches. I knew one lady who was confined during five weeks with several sores on her foot from such a case. I have no doubt that the application of the caustic would have prevented all the inconvenience and suffering she experienced. This observation will be confirmed by the following case."—pp. 59—62.

On Bruises.—The author states that he has not had a single case of bruise on the shin which he was not enabled to cure by the adherent eschar, provided an early application was made to him. The difficulty of forming this eschar is always increased by delay; but there is a peculiar difficulty with bruises of the shin, from their tendency to slough. Upon this subject he observes:

I have to make an observation of particular interest, both in a pathological and curative point of view; it is, that the formation of this slough has always been prevented by an early application of the caustic, in the cases which have hitherto fallen under my care. This fact may probably admit of explanation in the following manner: the bruise partially destroys the organization of the part, and the subsequent inflammation completing what the injury had partially effected, a loss of vitality takes place, and the slough is formed. The early application of the caustic has already been shown to have the remarkable effect of preventing the inflammation consequent upon certain wounds, and thus the part is suffered to recover from the injury done to its organization, and its vitality is preserved.

Whether this mode of explaining the fact be correct or no, the fact itself is extremely important, for the formation of a slough, which the early application of the caustic can alone prevent, renders it quite impossible to effect the formation of an adherent eschar.

When the patient applies too late after the accident to prevent the formation of a slough we must still treat the case by the caustic. It is to be applied over the bruised and inflamed part. The eschar remains adherent round the part occupied by the slough, and prevents or moderates the inflammation, and when the slough separates an eschar is to be formed over the exposed sore."—pp. 65—67.

In neglected and severe cases, which are attended with much inflammation, the part should be treated for a day or two with cold poultices, that the caustic may not vesicate the skin, and that the eschar may adhere.

We quote the following case:

"Mr. Granger, aged 36, was exposed to a severe bruise by a great weight of stones which had been piled up, falling upon the outside of the leg; he was extricated from this situation with much difficulty. Besides the bruise, the skin was removed from the outside of the leg to the extent of ten or twelve inches in length, and in some parts an inch and half in breadth; and in the fore part of the ancle a deep furrow was made by the rough edge of one of the stones. I applied the caustic in about half an hour after the accident, over the whole surface of the wounds, and protected the eschar by the gold-beater's skin. The patient was directed to keep the leg cool and exposed to the air. He took no medicine.

"On the succeeding day the leg was a little swelled, but the patient did not complain of any acute pain, but only of a sense of stiffness. An adherent and perfect eschar was found to be formed over the whole extent of the wound. There was no fever."—pp. 70—72.

On the third day the swelling had abated, but the patient was still enjoined rest. The next day he walked about, and from that period pursued his usual avo-

cations. The eschar separated in about a month. Upon this case the author has the following remarks:

"I think it totally impossible to have cured this wound, by any other remedy, in less than a month; during which period the patient must have suffered much pain and fever, and have been quite confined.

It is also quite certain, I think, that there would have been an extensive slough, from the severity of the bruise. This was doubtless prevented by the application of the caustic."—p. 73.

Mr. H. further states that the inflammation "attendant on a *recent* wound will be removed by the caustic, although the same degree of inflammation at a later period would be aggravated, and require the cold poultice and lotion, and render the formation of an adherent eschar impossible."

On Ulcers.—"In order that the treatment by eschar may be successful, there must be the following conditions in regard to the ulcer: first, the surface occupied by the ulcer must not be too extensive; secondly, it must not be exposed to much motion or friction; and thirdly, it must not be attended by a profuse discharge; for all these circumstances have a direct effect in preventing the formation of an adherent eschar or of removing it if formed.

I observe, therefore, that I have not found the mode of treatment by eschar to succeed in large ulcers of the legs. But in small ulcers, and especially in those irritable and painful little ulcers which are so apt to form about the ancle, and occasionally occur near the tendo achillis, and in which Mr. Baynton's plan is inadmissible, the caustic is invaluable; in these cases the cold poultice and lotion should precede the application of the caustic, for a few days, that the irritability and inflammation of the sore and surrounding skin may be first subdued; and after the eschar is formed, the part must be kept exposed to the air and defended from external injury, by enjoining the patient to wear trowsers and to be careful not to disturb the eschar.

The plan of curing ulcers is exactly what has been described in the treatment by the unadherent eschar. For in these cases the eschar is generally unadherent at first. It is necessary therefore in all cases, except those of very small ulcers, to examine the eschar, making a small puncture or rather smooth incision in its centre, so as to evacuate the subjacent fluid if there be any, taking great care not to break down or bruise the eschar so as to leave its inferior surface at all ragged. This operation should be repeated daily until the eschar proves to be quite adherent. And if the ulcer be rather large, rest should be enjoined until the adherent eschar be fully and safely formed, and a dose of saline purgative may be interposed. It must also be particularly borne in mind, that the eschar must be constantly defended by the gold-beater's skin, which must be removed and re-applied at each examination.

I have here spoken of ulcers upon the legs. But the same observations apply to ulcers on other parts of the body, and these are, in general, far more manageable than the former, and do not require the same rest during the unadherent state of the eschar."—pp. 82—86.

We quote the following cases:

"Case 22.—J. Copland, blacksmith, æt. 38, came to me with many deep ulcerations, from the size of a horse-bean to that of a pea, attended with great pain, heat, itching and excoriations of the surrounding skin, obliging him to rest at different times, for several days together. These ulcers came without any apparent cause, have continued for many weeks, and have only been a little benefited by rest, although he has applied many kinds of ointment, the last consisting of equal parts of mercurial and of the tar ointment. I applied the lunar caustic upon each ulcer, but not over the excoriation, and I enjoined the patient to leave the whole exposed to dry.

On the following day, I was gratified to find that eschars had formed upon every ulcer; upon examination, a little fluid was found to exist under several of the larger eschars; this I evacuated, and I then applied the lunar caustic to the points from which it had issued to make up the breach of continuity of the eschars over the surface of the ulcers. There was far less inflammation and scarcely any pain, and he has continued his occupation of blacksmith.

On the third day nearly all the eschars were adherent; three, however, had unfortunately been removed by an accident; I renewed them by again applying the caustic.

In four days after the last report, most of the eschars had separated from

the smallest ulcers, leaving the parts healed.

In a day or two more, my patient took cold and was affected with hoarseness and cough, and the skin round the eschar became excoriated a little. I directed a saline purgative and applied the lunar caustic to the excoriated parts.

On the succeeding day his cold was better and the eschars adherent. I directed five grains of the Plummer's pill to be taken night and morning, which he continued about a week.

Five days after this period, I again observed a disposition to excoriate. I applied the caustic.

In two days more, the eschars were adherent, and there was no further appearance of excoriation.

In ten more days, the eschars had separated and all the ulcers and excoriations were completely healed."—pp. 90—93.

"CASE 28.—Mrs. U., aged 60, has been subject to ulcerated legs for several years. She has one ulcer on the outer ancle of the size of a shilling, and another behind it of the size of a horse-bean; they have been extremely troublesome, and under surgical treatment for the last year, but during the last few weeks she has tried cerate, poultice, and the cold lotion. The leg is much swollen and inflamed, the redness extending several inches round the wound and over the instep; the œdema increases towards night. She has been in the habit of taking saline purgatives frequently.

I directed my patient to continue the cold poultice and lotion, and to rest completely for several days. At this period, the inflammation having somewhat abated, I applied the lunar caustic to form eschars, and protected the parts with gold-beater's skin.

On the following day there was a slight increase of redness round the eschars. Upon making an incision into their centre some fluid was evacuated. The same report was made on each of the two following days.

On the seventh day, the eschars having been neglected, fluid had escaped from beneath the eschars at their edges, and my patient complained of more pain. A little more fluid escaped in the same manner on the following day, on making a little pressure upon the eschars. I applied the caustic to make up the breach.

Subsequently to this day there was an increase of inflammation. From this circumstance, and from the neglect of the eschars for two or three days already mentioned, I suspected the formation of a scab under them. It was impossible to pierce the eschars by the penknife without breaking them, as they had become too hard and thick by delay and the addition of the scab.

I again directed the cold poultice for four or five days. On examining the wounds on the separation of the eschars, I found the healing process going on. I reapplied the lunar caustic to form eschars, and I evacuated a little fluid from their centre for three successive days.

At this time the patient took cold, and a smart attack of fever came on, and the part round the eschars became much inflamed. I prescribed an emetic and purge, and a cold poultice and lotion.

In the space of a week I again attempted to form an eschar over the larger wound, for the smaller one had quite healed.

The next day I discharged a little fluid from the centre, and again on the eight or nine succeeding days, giving saline purgatives.

After this time the eschar remained adherent, and no further remedy was required.

This case is particularly interesting and important, as it illustrates the plans to be adopted in two circumstances of no unfrequent occurrence; 1, when there is an attack of fever and increased inflammation, and 2, when a scab forms underneath the eschar. In both cases we must relinquish our attempt to form an adherent eschar for a time,—apply the poultice, and recur to the caustic in the course of a few days.

In the beginning of my trials of the treatment of the ulcers by the caustic, I was repeatedly betrayed by the smooth appearance of the eschar, to think that all was going on well, when in fact a scab was all along forming underneath. In these cases inflammation soon followed, and it was only by carefully and daily evacuating the fluid effused under the eschar, that I at length succeeded in effecting an adherent eschar free from surrounding inflammation. This remark cannot be too often repeated."—pp. 107—113.

The author makes a few remarks on whitlow, but cites no case. It is best treated, he thinks, by freely opening the abscess, applying the caustic within the cavity, and covering the part with a cold

poultice. He next relates two cases of inflammation of the fingers, which were treated by incision, caustic, and poultices. There are also a few remarks on the fungous ulcer of the navel in infants, which the author removes by the scissors; and after applying the caustic, defends the part from the air by gold-beater's skin. Some observations on the housemaid's knee and *tinea capitis*, of no particular importance, conclude the section.

When wounds and ulcers are small and superficial, and seated in parts which have little cellular membrane, there can be no doubt of the efficacy of the plans of treatment which the author proposes; but when an ulcer is very large, or where from its locality it cannot possibly remain undisturbed, as between the toes, or in cases attended with much inflammation or œdema, the treatment by eschar must not be thought of. The practice is likely to succeed best with those sores that are small and indolent, which, indeed, every surgeon has been accustomed to touch with caustic. Mr. H. has found it inapplicable in extensive lacerations, and the greater proportion of incised wounds.—He has also failed in his attempts to heal scrofulous sores by the adhesive eschar. In erysipelatous inflammation, where vesicles are formed, and in recent burns, the caustic does harm; boils, also, are aggravated rather than diminished by it. But he has undoubtedly proved, that caustic is available in more cases than surgeons have hitherto supposed, and that, where its individual powers are insufficient, it is an useful adjuvant.

The reader will observe that we have made a very copious analysis of the volume.

MUSEUM AT ST. THOMAS'S HOSPITAL.

Mr. Green, in his "Reply" to the '*Memorial*' of Messrs. Key and Cooper, has the following paragraph:

"The true statement is, that Sir Astley Cooper, and not Mr. Cline, received 1000*l.* from me for the moiety of the Museum. Mr. Cline, senior, did, indeed, receive 1000*l.* from Sir Astley Cooper at the same time, but it was, as the executor of Mr. Cline, junior, according to articles of agreement. It is upon this transaction that the misrepresentation is founded, that Mr. Cline, senior, received 2000*l.*; the fact being, that he received the last mentioned 1000*l.* only as an executor: and, according to the terms of the same agreement, Sir Astley Cooper is now entitled to receive 1000*l.* from me. This being paid, Sir Astley Cooper, indeed, will have received 2000*l.* but Mr. Cline, senior, in his own right, only 1000*l.*"—Pamphlet p. 54.

No sooner was this statement published, than it elicited some expressions from Mr. B. Cooper of rather an *unqualified* nature, they will be found in a letter addressed to Sir A. Cooper by Mr. Green, which we will here insert:

"46, Lincoln's Inn Fields,
Nov. 6th, 1825.

Sir,—Mr. Bransby Cooper made, yesterday, in the Theatre of Guy's Hospital, a public statement, 'That Sir Astley Cooper never received, either directly or indirectly, a thousand pounds from me for a moiety of the Museum; and that there still rests a *lie* between Mr. Bransby Cooper and myself; and that it is not with him, so help him God!'

Mr. Bransby Cooper acknowledges these words, and an explanation having been requested by me of the imputation contained in them, he has made the following statement:—

'Mr. Bransby Cooper can in two points falsify the accusations made by Mr. Green in his reply to Mr. B. Cooper's memorial, namely, with respect, to Sir A. Cooper's ever having received one farthing from any one for the Museum, or any part of the Museum, I pledge myself he never did, notwithstanding Mr. Green's assertion, that Sir A. Cooper, and not Mr. Cline, received that 1000*l.*'

'The second point on which Mr. B. Cooper contradicts Mr. Green's assertion, is with respect to his denial of having received a conditional letter as to Sir A.

Cooper's resignation. In answer to that, Mr. B. Cooper says, that he himself gave Mr. Green that letter; that Mr. Green read it, and said, that had he had himself to propose conditions, they would have accorded with those of Sir A. Cooper, with respect to the division of the Museum; that he readily acceded to them; and in consequence of this concession of Mr. Green's, Sir A Cooper resigned.'

Now, Sir, as it will not be believed that these assertions could have been hazarded without your sanction or authority; and, as a full explanation has now become as necessary to your character as to mine, I beg the favour of an explicit answer to two questions. Did you ever receive 1000*l.* from me for a moiety of the Museum? Did you write me a letter, saying you would not resign, but upon condition that your share of the Museum should become the property of your Nephews.

I am, Sir,

Your obedient servant,

(Signed) JOSEPH HENRY GREEN.

Sir A. Cooper, Bart."

In confirmation of the original assertion "that he had paid the 1000*l.* to Sir A. Cooper and not to Mr. Cline," Mr. Green, at page 11 of his pamphlet, thus writes:

"The fact is, that your payment of the sum due from you to Mr. H. Cline's executor, was posterior, by above twelve months, to your receipt of the 1000*l.* from me: and in proof of which the receipts themselves are annexed:

'Received, 3d August, 1820, of Mr. Joseph Henry Green, one thousand pounds, in full consideration for one half of the collection of Anatomical Preparations, and Preparations of Morbid Parts, contained in the Museum of St. Thomas's Hospital, together with the Drawings and Apparatus used for the teaching of Anatomy in the same Hospital.

(Signed) ASTLEY COOPER.'

'Received, 25th January, 1822, of Sir Astley Cooper, Bart., one thousand pounds, in full consideration for the moiety of the collection of Anatomical Preparations in St. Thomas's Hospital, the property of the late Henry Cline, jun., according to articles of agreement respecting the same, dated 17th Nov. 1811.

(Signed) HENRY CLINE, Executor.'

'I admit the above to be a correct copy of the Receipt.

ASTLEY COOPER.

Dec. 2d 1825.'"

Mr. GREEN's magnanimous and spirited conduct on being charged with uttering a *lie*, is entitled to universal approbation, and we trust it will for ever furnish a moral and salutary lesson to those mock heroes and spurious defenders of honour, called duellists, for whose benefit we will here briefly describe Mr. Green's panacea for wounded honour:—should A. give B. the *lie*, B. is to demand an *explanation*, and if A. *persist* in the accusation, B. *must then write to* C., ask an indifferent question or two, and the affair immediately terminates to the satisfaction of all parties. We have been highly gratified with the simplicity and manliness of this proceeding.

How are the contradictions contained in the above statements regarding the payment of the 1000*l.* to be reconciled? Mendacity of no very moderate extent must exist on one side or the other.—Sir Astley Cooper and his Nephews assert that Mr. Green paid the 1000*l.* to Mr. Cline. Mr. Green, on the contrary, as positively states, that he paid the money to Sir A. Cooper, and to prove his accuracy, has published the receipt given by Sir A. Cooper. How then, are we to arrive at the truth? This we shall see presently. We will first relate the circumstances connected with this money business as they actually occurred. On the death of Mr. H. Cline, Mr. Cline sen. was entitled to 1000*l.* for a moiety of the Museum, at this time an arrangement was entered into, that Mr. Green should become Sir A. Cooper's partner in the Museum. Mr. Green tendered to Sir A. Cooper the above 1000*l.*, in payment for the moiety previously held by Mr. H. Cline. When Mr. Green offered this money to Sir A. Cooper, the worthy Baronet refused to take it, and advised Mr. Green to present it to Mr. Cline, observing at the same time, that as Mr. Cline was his *Uncle*, he probably would not re-

ceive it from him. Subsequently, Mr. Green acquainted Sir A. Cooper, that Mr. Cline would not receive the cash unless accompanied by a receipt from *him*. "Well," said Sir A. with his usual frankness, "I will give you a receipt," *which he actually did;* Mr. Green at the same time *retaining the money* for the purpose of handing it over to Mr. Cline. *Eighteen months* after this took place, the receipt from Mr. Cline was sent to Sir A. Cooper, *during which period the money had not been in the hands of Sir A. Cooper for one moment, or any of his agents.*

With a knowledge of these facts, was it not a "contemptible artifice" on the part of Mr. Green, to publish the above receipts without any explanation of the circumstances under which they were given? The thing speaks for itself. Such duplicity is disgusting to every honourable mind.

It may be alleged that this statement of facts is equally unsupported with the assertions of Mr. J. H. Green; that it is merely denial opposed to denial, and it may also be asked how can the truth be indisputably ascertained? We will acquaint Mr. Green—by his *procuring* a letter from Mr. Cline, stating WHEN *he received the thousand pounds,* and from WHOM *he received it.* We are much surprised that the necessity of obtaining such a document did not occur to Mr. Green at the very outset of the controversy, and as it appears to have entirely escaped his notice, we feel great pleasure in directing his attention to a circumstance which may hereafter prove of the highest consequence to his reputation.

We will reserve a niche for the insertion of Mr. Cline's letter in our ensuing number.

HOSPITAL REPORTS.

GUY'S HOSPITAL.

Carcinomatous affection of the Pharynx.

The pharynx, according to the authority of Sir Astley Cooper, is not unfrequently the seat of cancerous disease, of which the following case is said to be an example. There is, however, one curious and almost inexplicable circumstance (as will appear from the report) connected with this case, namely, the entire absence of lancinating pain, which is in general regarded as one of the essential characteristics of cancerous disease in any part of the body.

Case.—William Cox, aged 60, a labouring man from the country, and of temperate habits, was admitted on 9th of November, under the care of Mr. Key, with disease of the throat, which he stated to be of many months' standing. He complained of much difficulty in swallowing, and also of not being able to breathe through the nostrils, which circumstances alone, but more especially the former, induced him to seek relief; for he said that he was entirely free from pain, and indeed his appearance did not falsify this assertion. On examining the throat, it was found that the natural appearance of the parts about the fauces was so completely altered by disease, as to render it almost impossible to distinguish the original parts, and it is equally impossible to convey an adequate idea of the change thus produced. The pillars of the fauces and tonsils on each side were partly destroyed, and those portions which remained were converted into a rugged cartilaginous substance, the back of the pharynx converted into the same scirrhous substance, and also the œsophagus. The disease had in like manner extended to the soft palate, in the middle of which was a fissure, and on each side of this the parts had the hardness just described. There was no distinct or positive appearance of breach of surface, except on the velum, and even this Mr. Key considered dubious. The patient has now been in the hospital upwards of two months, but little change has taken place in the appearance of the parts, &c. The man states that he is quite free from pain. He has used a common acid gargle, and taken five grains of Plummer's pill at bed time.

There is one circumstance which it is material to mention, namely, that the

disease commenced, according to the patient's account, with a small hard tumour behind the last tooth of the lower jaw, and gradually extended from this part. There is slight enlargement of the glands beneath the lower jaw on the right side.

ST. THOMAS'S HOSPITAL.

Case of Fungous Exostosis of the Tibia.

E. S., aged 28, was admitted into Williams' ward, under the care of Mr. Green, on 22d of December, with disease of the right leg, the history of which was as as follows:

About ten years since, the leg at present diseased was crushed between two carts, and the tibia and fibula in consequence were broken. The patient recovered from this accident, but about six months after he was attacked with pain and much inflammation of the leg, which eventually led to the separation of a large portion of bone, or rather to an operation for its removal in Haslar hospital. He recovered from this, and resumed his employment, when about twelve months after, a small wound appeared on the leg, which was subsequently healed up, and the leg remained well until about twelve months since, at which time another opening, nearly on the site of the former, appeared, and he went into Bartholomew's Hospital, under the care of Mr. Lawrence. The leg again got well, and remained so until the month of October last, when it swelled, became painful, an ulcer again appeared, and has been gradually enlarging up to the present period. It frequently bled, and on one occasion, about a fortnight before he was admitted under Mr. Green, he lost upwards of three pints of blood.

The ulceration is about half way down the leg, and filled with large granulations, constituting an irregular projecting fungous mass, which readily bleeds. There is a discharge of a bloody coloured serum, which has an exceedingly offensive smell. During the time he has been in the Hospital, there have been repeated discharges of blood, and on one occasion (about ten days since) the bleeding was so profuse, as to require the assistance of the dresser in order to suppress it. The present aspect of the patient is not unhealthy. He complains of debility, attributable to the loss of blood on different occasions; but he does not experience much pain from the disease. Mr. Green considers the disease to be of such a nature, that it will be necessary to amputate the limb, and this, too, before the repeated hæmorrhage shall have much exhausted the constitutional powers. The treatment hitherto employed has principally consisted in observing absolute rest, and applying cold lotion to the part.

Jan. 26. The limb has since been amputated, and the patient is doing well.

Case of Carbuncle.

The propriety of making an early and free incision in cases of carbuncle, so as to allow of the slough to escape, we suppose is so well known, and so generally acted upon, that it would be superfluous to offer any remarks on the advantages of this plan of treatment. The following case, however, may serve as an example.

Case.—J. H., a man of dark complexion, and about 56 years of age, and whose habits of life have been intemperate, was admitted into the Hospital on 8th of December under the care of Mr. Tyrrell, with a large foul sloughy ulcer on the occiput.

It had existed upwards of three weeks, and was of the size of a crown piece, being situated on the occiput about midway. The first appearance of this disease was a deep-seated hard tumour, which was exceedingly painful; attended with great itching and burning heat. It progressively increased, and within the last ten days previous to admission, the integuments ulcerated, leaving a tough, brownish-coloured slough in the centre. The parts to a considerable extent around were of a purple colour and exceedingly tense, and the edges of the ulcer were very hard.

There was a deep throbbing pain, and a distressing sense of constriction at the back of the head. The patient was entirely deprived of rest; the pulse was small and feeble; the tongue slightly furred, and the bowels somewhat constipated.

Mr. Tyrrell directed the hair to be shaved from around, and this having been done, by means of a scalpel he made a deep crucial incision through the slough, and extending some way into the surrounding integuments. A poultice of stale beer grounds, mixed with linseed meal, was ordered to be applied to the part, he was directed a pint of porter daily, with generous diet, and to take the following medicines:

2 grains of calomel at bed time,
Sulphate of quinine, 4 grs. three times a day.

The bowels to be kept open, by occasionally taking a mixture of the sulphate of magnesia and infusion of roses.

Dec. 12. The patient has experienced much relief, from a short time after the incisions were made; the throbbing pain and sense of tension are much lessened, and he can now obtain rest. The slough is separating around the edges. Continue the medicines, and also the stimulating poultice, and let him have two pints of porter daily.

14. The slough has separated from the edges of the sore, but none of it has yet come away. The pulse is improved, and the patient expresses himself relieved. Continue the remedies.

17. Portions of the slough are now detached, and the remainder is loosened. The suppurative process by which this dead cellular membrane is to be thrown off is fully established. The edges are healthy, and covered with granulations.

It would be tedious to enumerate the daily changes which took place; it will be sufficient to observe that the slough was slowly detached, and the parts gradually assumed a healthy appearance. The constitutional powers meanwhile were supported by means of the quinine and porter, and thus the cure was ultimately effected.

Mr. Tyrrell remarked, on visiting this patient, that he had seen cases of carbuncle situated upon the occiput, prove fatal by inducing inflammation of the membranes of the brain.

Case of strangulated Scrotal Hernia.

J. Albery, a robust country-man, and one whose general appearance bespoke "a rude state of health," was brought to the hospital on Monday noon, January 16, labouring under strangulated scrotal hernia of the right side. The man was placed in George's Ward, under the care of Mr. Green, who happened at this period to be in the hospital, and visited the patient immediately. The patient stated that he had been the subject of hernia upwards of fifteen years, that during that period, it frequently came down, and was in general easily returned on his assuming the recumbent position, without the necessity of obtaining medical assistance. About four years since, however, the hernia descended, and he was unable to return it; the swelling continued for two or three days, until at length a surgeon effected its reduction. Since this time there has remained a fulness about the right side of the scrotum, which arose (as we shall presently find) from the circumstance of a portion of omentum remaining in the hernial sac, and becoming irreducible. With this state of parts, and indeed, from the period at which he first perceived the rupture, he had constantly worn a truss.

The hernia descended on Monday morning, about three hours previous to the admission of the patient into this hospital; the swelling came on suddenly whilst in the act of walking, and not in consequence of any violent muscular exertion. He applied for relief to a surgeon, in the Borough, (Mr. Kent,) who attempted for a short time the reduction of the hernia, by application of the taxis; his efforts proving unsuccessful, the patient was sent to the hospital. On examination, the hernial swelling was found to be about the size of a goose's egg, extending from a short distance above the external abdominal ring, some way into the scrotum; the base of the tumour resting upon the testicle. The swelling was very firm and unyielding, somewhat tender upon pressure, and there was a distinct indurated ring to be felt around the neck of the tumour, firmly embracing the contents; this indurated ring was immediately above the external abdominal ring, which was quite free. The patient complained of a dragging pain in the abdomen, with a sense of constriction; there was a state of nausea, not, however, amounting to actual vomiting; the pulse was not accelerated, neither was there any marked expresssion of anxiety in the countenance.

Mr. Green directed his dresser to bleed the patient to syncope, which effect was completely produced, after the abstraction of about twenty ounces of blood. The taxis was now applied by Mr. Green for the space of fifteen minutes, but the tumour did not yield in the least; the tenderness was somewhat diminished after the venesection. The patient had now recovered from the faintness consequent on the loss of blood, and Mr. Green remarked, that the patient having already been in the most favourable state for the reduction of the swelling, he should no longer persist in the use of the taxis, and indeed he was persuaded, from the general unyielding feel which the tumour possessed, and more especially from what he considered a thickening of the neck of the sac, clearly to be felt, embracing the upper part of the tumour, that nothing short of an operation would relieve the patient. This was suggested to him, and after an hour's consideration, the poor man consented to have the operation performed.

The operation was performed by Mr. Green about three o'clock; he commenced by making an incision just opposite to the external abdominal ring and extended it down to the lower part of the tumour; in this part of the operation simply cutting through the integuments and infra-jacent cellular membrane. The operator continued to dissect carefully through the layers of fascia, by means of a scalpel, not employing the director, and slitting up these layers by means of a bistoury, as is usually the practice. At length having reached the hernial sac, it was pinched up and a small opening carefully made into it, from which a small portion of adipose matter immediately protruded; the sac was next completely laid open by means of the bistoury and director. The contents of the hernial sac being thus exposed were found to consist of a large portion of healthy omentum, and behind this a knuckle of *dark-coloured intestine*. The next object was to ascertain the seat of the stricture, with which view Mr. Green passed his little finger through the external abdominal ring, and under the stricture, which was immediately above the ring; it was formed by the neck of the sac, which had become much thickened from the pressure of the truss.

Mr. Green now introduced into the wound a probe-pointed bistoury, passing it flat on his finger, until he reached the point of stricture, and then turning the cutting edge of the instrument upwards, he divided the stricture pretty freely in a line directly upwards.

Upon cutting through the stricture a small quantity of fluid gushed from the abdomen; it is worthy of remark that the sac did not contain any fluid. The intestine was now returned into the abdomen by means of gentle manipulation. On examining the omentum the lower portion was found to be firmly adherent at two points of the hernial sac; it was consequently irreducible and constituted that swelling in the scrotum, which the patient stated as remaining after the usual reduction of the other parts.

Mr. Green having determined on removing the whole of the protruded portion of omentum, he cut through it at the upper part and next through its adhesions with the sac. There was considerable bleeding from the omentum, and it was necessary to secure one of the arteries with a ligature. The hernial sac was so exceedingly loose as to admit of its being almost entirely turned out from the wound, and it was with difficulty kept below the edges, which were brought together by means of a suture and strips of adhesive plaster, over which a compress of lint was applied.

Jan. 17. We omitted to state that the patient's bowels were relieved on the day previous to the operation. We find that he has had one evacuation this morning; pulse 86, and somewhat sharp; tongue covered with a thin white fur. There is slight tenderness of the abdomen on the right side immediately above the wound; fomentations have been constantly applied to the abdomen since the operation. He ate some boiled milk this morning, which Mr. Green considered improper, and directed that nothing more than gruel should be taken in the way of diet.

Sulphate of magnesia, one drachm;
Mint water, one and a half oz.;

to be taken every two hours until the bowels are freely acted upon. A common purgative enema to be administered.

18. Pulse rather quicker than yesterday, but less in volume; tongue white; he had some sleep in the night. He has taken five doses of the mixture, and has had two copious evacuations since yesterday. The wound was dressed this morning and has a very favourable appearance; the lower third has united by the first intention. Mr. Green directed that the purgative mixture should be discontinued, the warm fomentations still to be applied, and only to partake of gruel.

19. The report of to-day is highly favourable; pulse 84; no tenderness of the abdomen; slept well last night, and expresses great inclination for food. He took a dose of house-physic this morning, and has had two evacuations from the bowels.

20. In every respect going on well.

21. Bowels open; skin cool; pulse moderate; and abdomen free from tenderness. The wound has been dressed this morning and is healing fast. Continues on low diet, which is almost the only thing he complains of.

23. Still free from any unfavourable symptom.

ST. BARTHOLOMEW'S HOSPITAL.

Case of entire disorganization of the Left Kidney.

Mary Plant, a married woman, æt. 37, was placed under the care of Dr. Latham, on the 1st of December. Two months previously, she was seized with severe pain in the left lumbar region, extending to the opposite side. Within the last fortnight a cough had come on, attended with slight expectoration. It did not ap-

pear that she had any efficient professional advice; she says, however, that a blister was applied, and some aperient medicine had occasionally been taken. At present there are pain and constriction in the region of the chest, attended with a cough and expectoration. The tongue is slightly loaded; the bowels are regular; the pulse 105, and frequent. She was directed to take six grains of James's powder every six hours for three successive times, in conjunction with the following draught, which was ordered to be regularly continued:—

Almond mixture, an ounce and a half;
Camphorated tincture of opium, 20 drops;
Compound spirit of ammonia, 1 drachm.

A blister to the chest. Milk diet.

2. On visiting her to-day, we find the symptoms relieved. The cough and expectoration are less; the skin is moist, and she has slept during the latter part of the night. Pulse soft. On examining the abdomen, the liver was found to be enlarged; but she complains of no pain on pressure. The mixture continued, and five grains of blue pill to be taken every night. Bowels open, and secretions natural.

4. Going on favourably; continue as before.

7. Complains to-day of pain in the loins in the situation of the kidneys, and principally in that of the left. The urine voided has a purulent appearance, and the discharge of it is attended with pain. Let her be cupped to 12 ounces over the left kidney, and in other respects continue as before.

9. From the cupping, she felt relieved; the countenance, however, has become pallid and dejected; her spirits are considerably depressed; and she evinces a total disinclination for food. Pulse small and feeble.

10. The cough has nearly left her, and with it the pain in the chest. About the left kidney, pain is still complained of; tongue moist; pulse 100, frequent; bowels open. Let a blister be applied to the part affected, and the effervescing saline draught to be substituted for the former mixture. Pills discontinued.

14. Pain increased, and she has passed a very restless night.* Ordered to be cupped to eight ounces, and repeat the medicines.

16. Much the same. Pulse very weak and feeble. A blister to be applied over the left kidney.

21. To-day she complains of erratic pain about the left hip joint, and apparently along the course of the urethra. The urine is still purulent, but the pain in the kidney is somewhat less. Twenty leeches to be applied to the hip, and the part to be well fomented afterwards. The medicines to be discontinued, and she was directed merely to take a little peppermint water occasionally.

24. Evidently sinking. A diarrhœa has now come on; her answers are given in a low and desponding tone, and life appears just hastening to a close. Twenty grains of aromatic confection, with seven drops of the tincture of opium in chalk mixture, were ordered to be administered three times a day. This had the effect of slightly checking the diarrhœa, and she lingered till the morning of the 28th, when she died.

Inspectio cadaveris.

The left kidney was found to be completely disorganized; its structure was reduced to a mere purulent mass. The capsule, however, had resisted this diseased action, and the purulent matter was consequently retained within it. The ureter on this side was likewise much diseased. The corresponding one did not present any marked change. The liver was found to be considerably enlarged and of a pale yellow colour. The brain was not examined.

Ulcer on the foot, successfully treated by sedatives.

H. B., the subject of this case, was a young girl 17 years of age; of loose character, and of fair complexion. She was admitted about eight weeks since, into Sitwell Ward, under the care of Mr. Lawrence, with a large superficial sore situated over the front of the right foot. From her own account it appeared that the sore first originated from wearing tight shoes, and her situation in life being such as to oblige her to walk about, it gradually grew worse.

This occurrence took place two months previous to her coming into the hospital; and latterly a medical man in Greenwich, from which place she comes, had used numerous applications, but with no good effect. It is worthy of remark in this case, that the menses ceased after the breaking out of this sore; about the usual time of her accustomed menstruation, an increased bloody discharge takes place from the surface of the sore. On

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* The blister ordered for this patient was never sent.

closely questioning her, she strictly denies ever having any venereal affection, except a slight gonorrhœal discharge, which soon got well; and there does not appear to be any reason to doubt the veracity of the girl's statement.

When she was first admitted into the hospital, the sore had a strictly phagedenic character; one portion having a healthy and healing aspect, while the remaining surface was foul and dark, attended with an ichorous and bloody discharge, and evidently spreading. The general health, however, did not appear to be much impaired. The part was ordered to be poulticed, and she was directed to take five grains of the aloetic pill, with myrrh, every night. Meat diet.

The next day the cinnabar fumigation* was had recourse to, and repeated for three days; but under this plan the sore became worse, and was evidently spreading. Mr. Lawrence now directed the surface of the sore to be touched with concentrated nitric acid, and dry lint kept applied over it. This plan, however, was attended with no better result than the former ones, and the sloughing had now so far extended itself, as to occupy nearly the whole of the anterior surface of the foot; at the same time partially separating the extensor tendons, and exposing the metatarsal bones.

Since her admission, a considerable bloody discharge attended the sore, and this was evidently increased at her menstrual periods. She was now ordered to take an eighth of a grain of the oxymuriate of mercury in decoction of sarsaparilla, and to have the surface of the wound touched with a solution of nitrate of silver. The pills were discontinued. All these measures failed in producing a favourable change, and from the painful and irritable state of the sore, her health began to suffer. She passed restless and uncomfortable nights, and all inclination for food was gone. The mixture disagreed with the stomach, and was consequently discontinued.

It was now, on Sunday the 18th of December, that Mr. Welbank, who was "going round" with Mr. Lawrence, suggested that the nitric acid largely diluted should be applied, and be renewed every hour with clean lint. This gentleman's recommendation was adopted and persisted in for about 36 hours, but it was attended with a decidedly prejudicial effect, and it was therefore discontinued. It was now clear that to persist in the use of stimulating applications would only tend to aggravate the mischief; and it was in consequence that Mr. Lawrence determined to adopt the "soothing system." He directed that five grains of the extract of hemlock should be taken at bed-time, and the following lotion to be kept constantly applied to the sore:

Battley's solution of opium, 2 *drachms*;
Water, 1 *ounce*.

On the following day, (22nd,) the surface of the ulcer was the same. The following pill was ordered to be taken at bed time, and repeated if necessary, until some effect was induced:

Crude opium, 1 *grain*;
Extract of rhubarb, and
James's powder of each 2 *grains*.

On visiting her the following day, we found she had again passed a very restless night, but the sore had assumed a more healthy appearance.* The lotion was directed to be continued with the pill.

From this time the salutary effects of these measures were very obvious; it was indeed surprising to observe the even daily amendment which took place. Within a week the whole of the metatarsal bones which had been exposed were covered by a healthy granulating surface. The application of the lotion was thought to be no longer necessary, and it was, therefore, discontinued. The surface has since been dressed with the common resin dressing, and the parts have now nearly healed.

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* The mode of using this highly useful application is as follows:—A solid piece of iron, of a conical shape, the base of which measures about six inches in diameter, is made red hot, and then placed on a common brick, contained in an earthen pan; over this hot iron is sprinkled two or three tea-spoonfuls of cinnabar; a copper tube, of the shape of a syphon, and having a funnel-shaped extremity, is adapted to the piece of iron, and the fumes passing through the tube are thus directed over the surface of the wound. The diameter of this tube is about an inch.

* The pills ordered the preceding day were not sent from the apothecary's shop, and the reason assigned was, that they did not know how to make them! They were sent, however, on the following day!